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DECEMBER 1950 25 CENTS

The Magazine for a Motoring World

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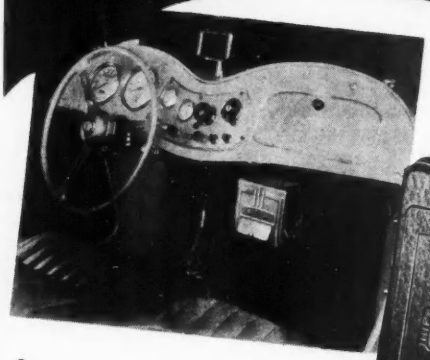

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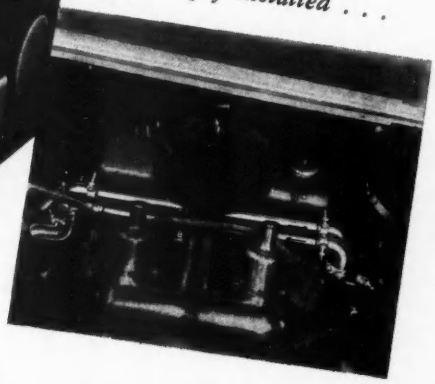

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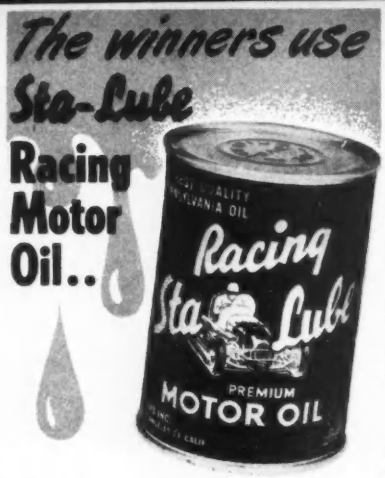

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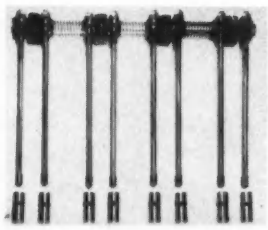

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MOTOR Trend

The Magazine for a Motoring World

DECEMBER 1950 Published Monthly VOL 2 • NO. 12

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COVER: Custom-built Chevrolets at the Carrousel Drive-In in South Gate. For more photos, see page 12. Girl is blonde, petite Willen Cowthon. Photo by FELIX ZELENKA.

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1. The names and addresses of the publisher and editor are:

Publishers: Robert R. Lindsay, 3177 S. Sepulveda Blvd., Los Angeles, Calif., Robert E. Petersen, 1128 S. Masselin Ave., Los Angeles, Calif.

Editor: Walter A. Woron, 15225 Cerise Ave., Gardena, Calif.

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5. The average number of copies of each issue of this publication sold or distributed, through the mails or otherwise, to paid subscribers during the 12 months preceding the date shown above was: (This information is required from daily, weekly, semiweekly, and triweekly newspapers only.)

Robert R. Lindsay, Robert E. Petersen, publishers

Sworn to and subscribed before me this 21st day of September, 1950.

(SEAL) Phyllis M. Avedon

(My commission expires August 20, 1954)

YOUR EDITOR SAYS . . .

WE HAVE been aware for the past couple of months of considerable comment and discussion about our editorial of September, 1950, "Speed Vs. Sport."

It seems that the intent of that editorial was misconstrued. No one wants an immediate marriage of the hot rod fraternity and the sports car clubs. And that is not what MOTOR TREND advocates—far from it.

We realize, as well as the members of each of these groups, that such a solution is neither practical, nor in many ways, is it desirable. It's true that, to a large extent, what hot rodders do does not necessarily interest sports car enthusiasts and vice versa.

Nevertheless, the two groups do have a common concern—the public's acceptance of their sport (whether or not it has been partially or previously accepted). Much as some of the sports car groups dislike to admit it, certain phases of their activities are still looked down on by the general public. And this is just as true of hot rod events. This situation is something which MOTOR TREND is attempting to overcome—the resolving of which, we believe, *can* be furthered by a pooling of effort *where* and *when* it will do most good. This is what we *do* advocate.

We know that there are certain articulate members in each of these groups who will stand in the way of such a unification of effort, and that they will not accept a consolidation of associations. And for this problem we have no simple solution. But, we can see no reason for an attitude of "being afraid of not being snobbish enough to be accepted by the snobs." A certain degree of this snobbishness, or intolerance, is evident on both sides; it is just as much an impediment to each of the groups.

So why not bury differences where they are of no account; differences that are of some import can always be brought out into the open for round-table discussion.—W.W.

THE CONTEST IS OVER!

THE FORD Anglia Body Contest is over, but—we have no winner yet. We were so deluged with entries close to the contest deadline date that it was impossible to judge all of them and come up with the winning design. However, the lucky winner will be notified as soon as possible and his name and winning design will then be published in the January 1951 issue of MOTOR TREND.

Entries poured into this office daily from all sections of the country and even from far-off Alaska and England. Designs varied in style from rough sketches, through engineering blueprints to colored drawings. With one entry, the energetic entrant even included a scale model. All types of cars were envisioned, with a preponderance for convertibles (coupes and sedans). Types of construction suggested included the use of original parts, plywood, Fiberglas, aluminum, sheet steel and laminated paper.

Since the contest was not limited to any age group, it was no surprise that we received entries from all ages, but that the age span would be 50 years was the farthest thought from our mind. The youngest entrant was 12 years of age, while the oldest was 62.

It is hoped that the award of the Anglia chassis and $500 in prize money can be made in person to the winner at MOTORAMA, although time and distance may prevent this. In any event, the Anglia chassis, the winning drawing and other interesting designs will be on display and the winner will be announced there. We suggest you see them in person at MOTORAMA, Nov. 16-19.—W.W.

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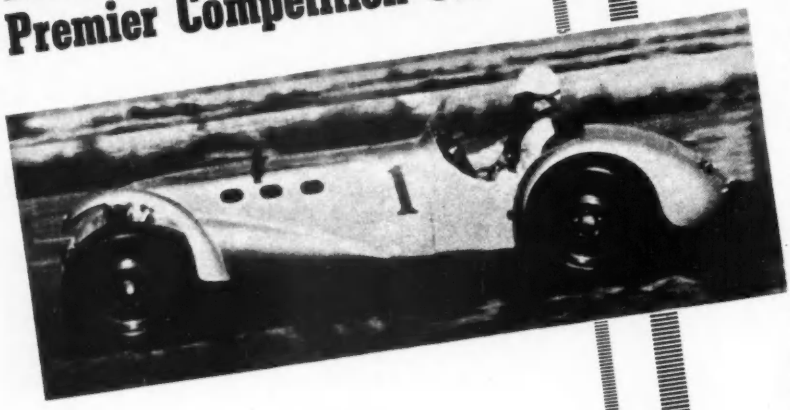

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Letters...

FROM OUR READERS

Letters published in this department are the opinions of the writers and are not to be construed as those of the editors. Address correspondence to: Letters From Our Readers, MOTOR TREND; 1015 So. La Cienega Boulevard, Los Angeles 35, California.

"WHO SHALL DECIDE . . ."

Gentlemen:

. . . The saying is that the three most popular automobiles, in order, are Chevrolet, Ford and Plymouth. Well, what I would like to know is what order do all of the popular autos in the US rank?. . . .

Tony Steinberg
Nebro, Illinois

—According to a national estimate from Ruben-Donnelly Motor Records, they rank as follows: Chevrolet, Ford, Plymouth, Buick, Pontiac, Dodge, Oldsmobile, Studebaker, Chrysler, Hudson, DeSoto and Packard, and Mercury, Nash and Cadillac; but according to R. L. Polk new car registration records, they rank as follows: Chevrolet, Ford, Buick, Pontiac, Oldsmobile, Plymouth, Mercury, Studebaker, Dodge, Nash, Hudson, Chrysler, Cadillac, Packard, DeSoto, Kaiser, Lincoln, Willys, Frazer and Crosley.—Editor

WRONG CREDIT

Gentlemen:

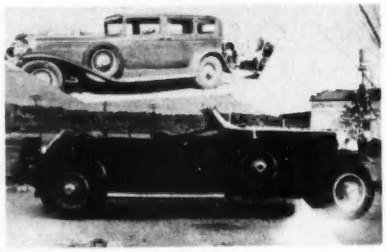
I would like to make a correction to the statement in your October issue in regard to the custom built Crosley ("Customs A La Mode"). I built the car for myself and my own pleasure with no help in designing it as hinted in your explanation of the car.

I did not meet Mr. Tressler until after the car was finished when he wanted to buy it from me. Neither does it have a lengthened frame nor Cadillac rear fenders—only Cad tail lights.

Arnold Johnson
Reedley, Calif.

—And we get the blame, Mr. Tressler.—Editor

RESTYLED "TANK"



Gentlemen:

Your September, 1950 issue was especially interesting to me for the two articles: "Cars of Distinction" and "Buying a Classic Car?" With the latter article there was a picture of a graceless classic car with a heavy black cross drawn across it. It is referred to as a "tank."

About five years ago, a classic car enthusiast brought just such a "tank" to me, here at home, and asked me to do what I could with it. The before-and-after pictures are enclosed.

During the era of the manufacture of classic cars, about all of the leaders, whether Duesenberg, Packard, or Cadillac and more, at one time or another came out with a "tank"; but they were all great ole cars and I would welcome (from those who might like my work of restyling) all opportunity to do what I can to put the rightful grace of their class into these dear old ugly-ducklings.

Leopold E. Garcia
Bernalillo, New Mexico

(Continued on page eight)

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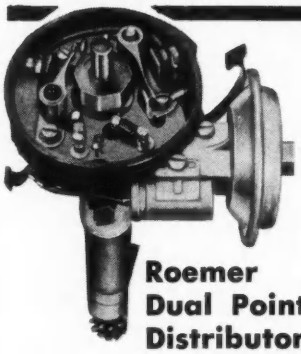

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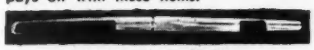

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Letters from Our Readers

(Continued from page six)

CAR QUIZ

Gentlemen:

I believe the picture in the "What Is It Dept." of October 1950 MOTOR TREND could possibly be that car which was in 1887 completed and operated on the streets of Lansing by Mr. Olds.

I may be wrong, but I believe that was the only three wheeler that met with much success.

A. R. Kreller
Pittsburgh, Pennsylvania

Gentlemen:

The only three wheeler auto I ever saw was in Northern Ireland, which I would say was around 1910-12. My guess is a Morgan. . . .

S. W. Dickson
Groton, Mass.

Gentlemen:

According to Mr. Fred Royfield, one-time manufacturer of carburetors, the three-wheeled car may be an Adams-Farwell.

This car is said to have a three-cylinder radial engine at the rear end. Mr. Royfield thought the engine might be lying flat but was not sure.

John H. Covert
Spring Valley, Illinois

Gentlemen:

. . . It is a Motorette . . . a two-cylinder car with 3¾x3¾ ins., 11.25 SAE hp [engine]. Piston displacement, 82.8 cu. ins.; L-head . . . thermo-syphon cooling; splash lubrication with Bosch magneto; fixed spark; Holley carb; cone clutch; two-speed transmission in unit with chain drive, with torque through springs. Rear [axle] ratio was 4½:1, wheelbase 72 ins.; front tires 28x3, rear 29x3½; wood wheels, front springs full-elliptic; rear ½-elliptic; front axle I-beam. Right hand drive. Weight 975 lbs. . . .

I was in the auto line when this (freak) car came out, in fact, was from 1911 to 1922. . . .

John Davis
Phoenix, Arizona

—Many unusual and hybrid cars have been built in the past, but from the snapshot, we are prone to agree with reader Davis and other readers who said it is a Motorette.—Editor

TRANSPORTATION REBUTTAL

Gentlemen:

Let me congratulate you on your article [Lloyd James' "It's Transportation," Oct. '50] defending the American stock car. I have known from experience that the American car can take a terrible beating and still run. . . .

Another thing about the American car that was not mentioned is that they get their power from large displacement, not high rpms. This . . . makes for a longer wearing engine. . . .

Frank L. Whaley, Jr.
Thornburg, Iowa

Gentlemen:

I have been following the European vs. American car controversy for a long time, and I feel I must chip in, after Mr. Lloyd James' staggering explanation [of] why foreign cars are small in overall size and engine displacement: "because of the high cost of fuel and because the roads were built for carts and bicycles, not automobiles" . . .

I was born in Great Britain, and have driven over thousands of miles of roads there. On the average, they are far better roads than here, having granite beds—are all concrete or true asphalt . . .

The basic reason that the cars are small is that the registration is paid per hp. . . .

There also seems to be some debate over the fast steering. I have driven almost every make of sports car, from Bentleys to MG's, Lancias to Fiats, and have never found the steering heavy. In fact, with that type of steering you "feel" the car, and know you have full control under any condition. . . .

Can't an American woman drive just for the joy of it, or must she be considered a publicity hunter?

Elizabeth Meier
Warner Robins, Georgia

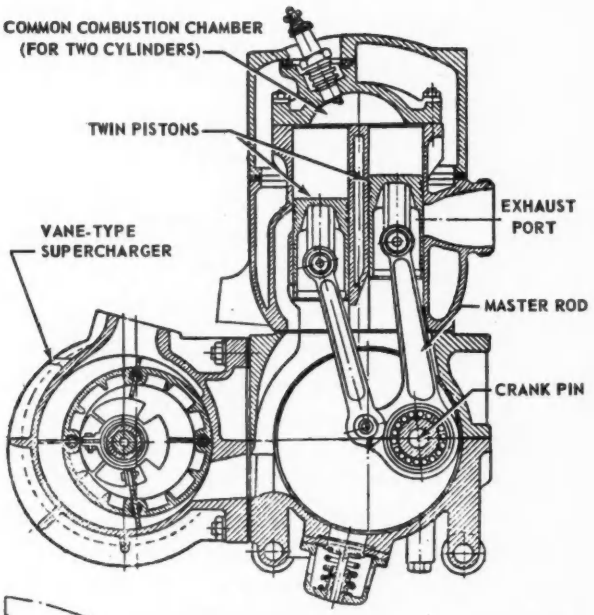
The Russian Threat

WHEN the world is once more restored to a state of peace will Russia's automotive production become a challenge to the rest of the world? Will the Soviet Union be able to devote much of its industrial strength, now channeled into military lines, to peacetime automobile manufacturing, thereby becoming a threat to the production capacity of western Europe, and even the United States?

In times like these it's hard to predict what will happen, but based on the past it seems that Russia could conceivably enter into a production war with the rest of the world. According to *Automotive Industries*, the Soviet Union is producing only 1/10 of the United States' total capacity, yet her production is greater than Canada's and is about equal to that of the United Kingdom. And for the first three months of this year, despite the Russian war effort, it has been stated that automobile production (cars and trucks) was up 61 per cent over 1949.

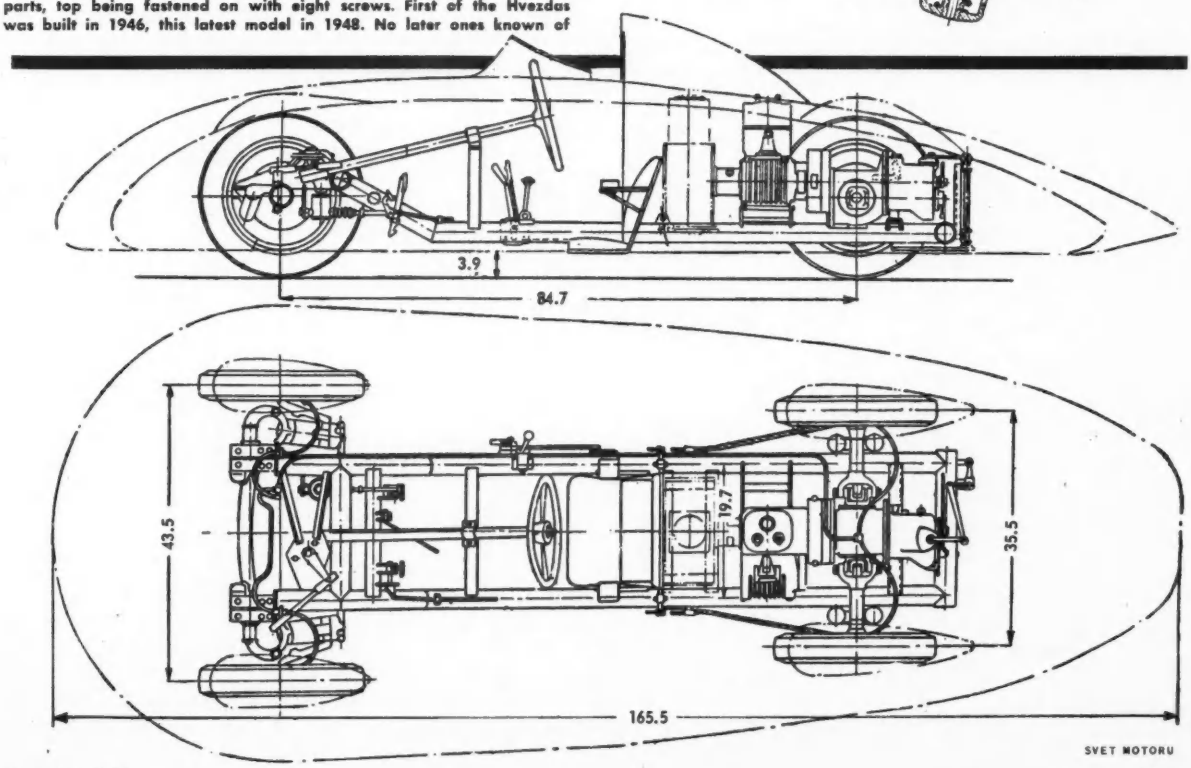
As reported in previous issues of MOTOR TREND, Russia is now building three basic models: Moskvitch (the smallest), the Pobieda (medium size), and the Zis (for the privileged). The Moskvitch comes in four body designs and is the poorest finished of all three; the Pobieda is chassis-less, has a 128 cu. in. engine of 55 bhp, and has reportedly poor body work; the Zis, which is a pseudo 1938 Packard design, with a 366 cu. in. engine of 150 hp, and made in three models, has a comparatively high standard of workmanship.

These passenger cars are not, in themselves, amazing or outstanding creations, but the fact that Russia's engineers have the mechanical know-how and knack of copying is self-evident. That they can produce record-breakers is also evident in the description of the *Hvezda III* (see drawings), which for a time held the unofficial world's record for Class J (350 cc, 21 cu. ins.). In 1948 this superbly streamlined, unusually powered little car set a time of 106.48 mph for the flying kilometer, one mph faster than the previous record held by Count Johnny Lurani of Italy. (Since that time, Lt-Col. Goldie Gardner has upped the record to 120.39 mph in his MG.) These speeds and the advanced construction of this car would appear to be somewhat indicative of Russia's potential.



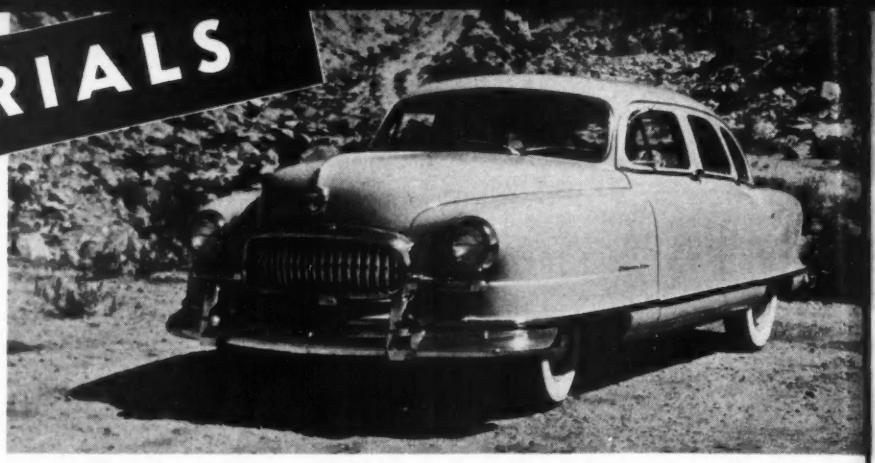
INTERESTING four-cylinder motorcycle engine used in Hvezda III has 21 cu. in. capacity with one master rod on a crankpin and other rod operating on an eccentric. Two pistons both use same combustion chamber; a vane-type supercharger boosts manifold pressure to 50½ ins. hg @ 7000 rpm. Compression ratio is 6:1. Engine is water cooled

MAJOR specifications of Russian Hvezda (Star) III are shown. Other specs.: 68 ins. at widest point; 29.5 ins. high (without bubble canopy); weight (fully loaded), 1036 lbs.; weight, front to rear, 485 to 551 lbs.; frontal area, 11 sq. ft. Frame is tubular steel, with independent suspension front and rear. The 21 cu. in., blown engine is located in rear, mounted at four points. Differential has four speeds and reverse; rear axle ratio is 5.14:1. The aerodynamically tested body consists of two parts, top being fastened on with eight screws. First of the Hvezdas was built in 1946, this latest model in 1948. No later ones known of



SVET MOTORU

MOTOR TRIALS

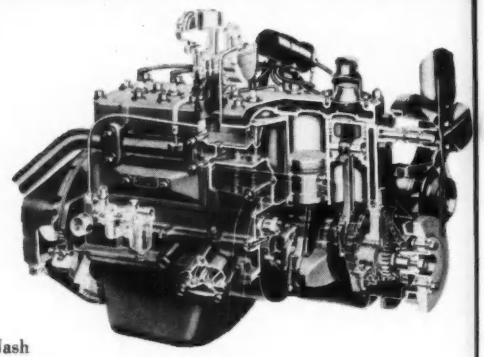


Nash Statesman

MT EDITOR FINDS NASH STATESMAN A CAR OF COMFORT AND ECONOMY

by Walter A. Woron

PHOTOGRAPHS BY THOMAS J. MEDLEY



LOOKING for a car with something different?—then the 1951 Nash may be the car for you. On long trips, the reclining seat (next to the driver) spells nothing but comfort. And if you don't want to be bothered with making motel reservations, or if you don't like to haul a trailer, the Nash is the car that provides you with a bed at all times. This comfort and convenience item is by far the Nash Statesman's biggest selling point; not that it doesn't have others, but even Nash's advertising agencies play up this advantage in preference to others.

After making arrangements with R. D. Bolt, Los Angeles Zone Manager, for a test of the Statesman, I received a 'phone call from Mr. Zimmerman of the zone office. When I arrived there to pick up the car, the day was giving indications of being a scorcher. This being California and October, the weather was good—good and hot. Mr. Zimmerman turned the keys over to me and said to keep the car for as long as we liked. This we did, keeping the car two days and two nights, and putting more than 500 miles on it.

The car had very low mileage, so we decided to break it in before doing much on the car test-wise, although it had been properly tuned by Nash mechanics. First, I drove to the Auto Club of Southern California, where Charley DeBriere put the car on the speedometer rolls as a cross-check on the accuracy of our fifth wheel. After giving me the figures on the speedometer error, Charley had a few comments to make, which I feel are worth passing on: "If speedometers were more accurate (like this one) there would be far less squawks from the public as to the performance of their cars. The fact that most speedometers are fast leads a person to believe that he can hold a certain speed from one point to another. When he arrives late, he comes to the obvious conclusion that the speedometer is fast and from then on ignores it. That is where the trouble begins."

From the Auto Club, I drove the Nash to Don Francisco's home, where we loaded our test equipment, photographic gear and installed the fuel consumption meter. We then headed down through traffic streets and on out to the open road.

The first day of trials were devoted to checking the car on the chassis dynamometer at Clayton Mfg. in El Monte, making fuel consumption checks (using Mobilgas Special) and braking tests. After these tests were completed, I brought the Statesman home and turned the car over to my wife to get the woman's viewpoint.

Her comments on the Statesman, and typically feminine, were: "The car handles well and has good riding comfort. Personally, I prefer a one-piece windshield, as on this car. Having the glove compartment in the middle of the dash is good, because if the driver needs anything from it while he's driving, it would be very easy to reach. It has a lot of space, too.

"The interior of the car appeals to me, because the upholstery looks durable. Being able to lie back in the passenger's seat is surely restful. As far as I am concerned, they made a major improvement in the car's appearance by adding the new fenders. It seems to lengthen the car and also gets away from the bulkiness."

Detailed Test Report

BEHIND THE WHEEL: When I slipped behind the wheel of the Nash Statesman I immediately checked for the accessibility of the various controls and found that they could all be reached quite easily. As I settled back in the seat I noticed that it was somewhat straight-backed, but after driving a few blocks, I appreciated the support. Vision is good in all directions, except that when I turned around to look out the right rear before changing lanes I had to rise up slightly to make sure no cars were coming. The left windshield corner post could be moved back slightly to improve

THE FRONT passenger seat has five positions. Here MT Editor is seen placing seat in horizontal position, making a bed out of the two seats

AMOUNT of body sway around corners shown

vision. I tried to move around in the front seat to eliminate the blind spot, but in the most comfortable position (against the door) the post was still in the way. Legroom and headroom in the Statesman are outstanding both front and rear, and as for the reclining seat (with five positions) on the passenger side, it's hard to beat. In all fairness to Nash and the driveability of the car, Don and I practically fought over that seat on the way home.

STEERING: Driving the Statesman around corners at excessively high speeds is not a recommended procedure, for although the controls are responsive enough, the amount of body heel might cause a person to oversteer the car and get into trouble. The 20:1 ratio gives you adequate control of the car, however. Checking for road shock going over railroad tracks and bumps in the road, we found that there was a certain amount of shock, but the annoying, sudden, noisy type of jar was not evident.

TRANSMISSION: No comments are necessary on the transmission of the test car, for it was equipped with Hydra-Matic (optional equipment), familiar to all. These cars are also available with conventional transmissions, with or without overdrive as optional equipment. One fairly constant complaint against this type of transmission seems to be the fact that if it is out of adjustment or if the engine is idling faster than necessary, the car will creep at a stop. One other disadvantage which we encountered was in climbing through Cajon Pass (seven per cent grade). It was very hot (over 90°) and the water temperature was climbing. To avoid overheating I depressed the throttle to shift the transmission to third, but as the car picked up speed, the transmission automatically returned to fourth gear. A positive shift-down device, not dependent on throttle position, would be a definite advantage on Hydra-Matic transmissions for such conditions.

RIDE: Traveling along at anywhere up to 60-65 mph there is hardly any wind noise evident in the Statesman. The ride is comfortable sitting in any seat in the car, and as mentioned before, the choicest spot is beside the driver. The Statesman is equipped with four coil springs, which provides for a very soft ride, but at high speeds a floating action can sometimes be disconcerting.

ACCELERATION: The Nash Statesman is primarily an economy car and particularly, in combination with Hydra-Matic and a 3.78:1 rear axle, is not designed for terrific acceleration. In traffic we found that the car did not have too much pick-up, but once it was on the open highway it cruised quite satisfactorily. During the acceleration tests (made with Mobilgas Special) we found that using LOW range and then shifting to DRIVE cut off a few seconds in the 0-60 mph and 10-60 mph checks. The 30-60 mph check was made by stomping the throttle hard at 30 mph, causing an automatic gear shift to third, and accelerating until another automatic gear shift was made into fourth gear around 55 mph.

TOP SPEED: It is not necessary to fight the wheel of the Statesman when you are traveling at high speed. We found this to be true both during high speed cruising and during the top speed runs. There is a minor amount of wind wander, but not a sufficient amount to cause any difficulty. The Statesman is not the fastest car in the Nash family, but it has enough speed for most drivers.

FUEL CONSUMPTION: The over-all average in fuel consumption of the Nash (not including top speed and acceleration runs) was quite high for such a car, being 19.07 mpg. At lower speeds, very good averages can be obtained, but with Hydra-Matic in traffic, consumption increases rapidly (see Table of Performance).

BRAKES: The Nash Statesman will stop better if you use a gradual pedal. If the brakes are hit too hard, it will cause a sliding of the wheels, with the car's weight causing it to continue on. As with any car, if you don't know how to recover from a slide you might conceivably find yourself in a precarious predicament. The brake stopping figures (see Table of Performance) are good for a car of this weight. No brake fade was noticeable at any time during these tests or during the entire motor trial.

Mechanical Features

The mechanical improvements of the 1951 Nash were covered in "Spotlight on Detroit" November, 1950 MOTOR TREND, but briefly these are: waterproofing of the ignition system, increased steering ratio (20:1), new carburetor, new "two-stage valve" shock absorbers and new type rubber engine mounts (for use with Hydra-Matic). Airflyte construction, with the single unit body and frame for extra strength and torsional rigidity, has been continued. The frontal appearance is almost the same, except for the new radiator grille, while the rear of the car has been redesigned, using new "fin type" fenders, which have the advantage of better tail light placement. The body on the Statesman appears to be well put together and interior appointments are unusually good for a low-priced automobile ($1696 f.o.b. Detroit).

The trunk lid is easily raised and when open reveals a fairly large, high trunk compartment, with 24.4 cu. ft. (not including tire). If you were to change a tire on this car, it would not be the easiest of jobs, particularly on the front, where the wheels are fully enclosed. However, it can be done, even though it takes some juggling to get the tire onto the axle hub.

The powerplant in the Statesman is an L-head six, delivering 85 bhp at 3800 rpm, with a displacement of 184 cu. in. and a compression ratio of 7:1. It is interesting to note that Nash provides an optional head of 7.35:1. No new major changes have been made in this engine over last year, except those discussed previously as mechanical improvements. The location of components and their accessibility is better than average.

Summation

The Nash Statesman can be summed up briefly by stating that it is an easy car to

(*Continued on page thirty-two*)

GENERAL SPECIFICATIONS

ENGINE

Type	L-head, in-line 6
Bore and Stroke	3⅛ x 4
Stroke/Bore Ratio	1.28:1
Cubic Inch Displacement	184
Maximum Bhp	85 @ 3800 rpm
Bhp/Cubic Inch	.462
Max. Torque (Bare Engine)	140 ft-lbs. @ 1600 rpm
Compression Ratio	7:1, 7.35:1 optional

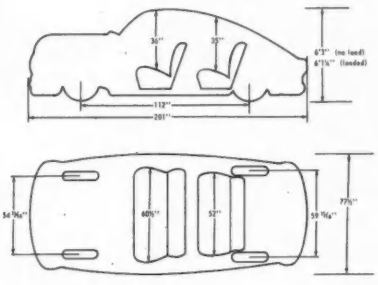
DRIVE SYSTEM

Transmission—Conventional three-speed; Ratios:—Low—2.57:1, Second—1.62:1, Third—1:1, Overdrive—7:1, Reverse—3.48:1

Hydra-Matic Ratios: —First—3.82:1, Second—2.63:1, Third—1.45:1, Fourth—1:1, Reverse—4.3:1

Rear Axle—Semi-floating Hypoid; Ratios:—4.375:1 (Standard, optional on overdrive-equipped cars); 4.875:1 Overdrive)*; 3.778:1 (Hydra-Matic)**.

DIMENSIONS



Turning Radius	21 ft. 2 ins.
Weight (Test Car)	3250 lbs.
Weight/Bhp Ratio	38.2:1
Weight/Road Hp Ratio	82.3:1
Weight Distribution (Front to Rear)	55.1/44.9%

*Optional equipment $93.50.
**Optional equipment $158.50.

TABLE OF PERFORMANCE

(For explanation of any figures or conditions in the following table, see copy under the particular heading.)

DYNAMOMETER TEST

1200 rpm (full load) 25 mph	22.5 road hp
2000 rpm (full load) 42 mph	36 road hp
2500 rpm (full load) 55 mph	39.5 road hp (max)

ACCELERATION TRIALS

Standing start ¼-mile	:24.78 (D)*; 24.47 (L-D)**
0-30 mph through gears	:07.81 (D); 7.90 (L-D)
0-60 mph through gears	:27.30 (D); 26.23 (L-D)
10-30 mph in high	29.12
30-60 mph in high	22.27

*Shift using DRIVE range only.
**Shift using LOW range, then shifting to DRIVE

TOP SPEED (MPH)

Fastest one-way run	78.47
Average of four runs	77.19

BRAKE CHECK

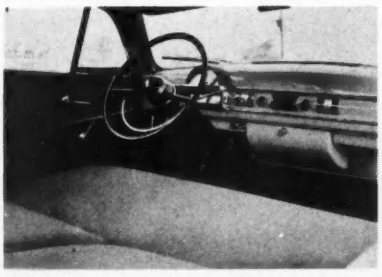
Stopping distance at 30 mph	28'0"
Stopping distance at 45 mph	79'11"
Stopping distance at 60 mph	166'3"

FUEL CONSUMPTION (MPG)

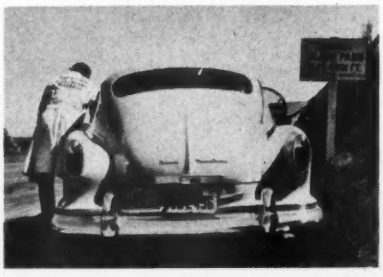
At a steady 30 mph	27.12
At a steady 45 mph	21.26
At a steady 60 mph	19.64
Through light traffic	18.82
Through medium traffic	14.79
Through heavy traffic	12.81

SPEEDOMETER CHECK

At 30 mph indicated 32 mph	6.6% error
At 45 mph indicated 49 mph	8.9% error
At 60 mph indicated 65 mph	8.3% error



FRONT seats both folded down, making bed



REAR view of '51 Nash shows new fender "fins"

TRUNK compartment is spacious—24.4 cu. ft.

Customs OLD Customs NEW Customs BORROWED

RIGHT AND BELOW—The graceful, restrained, and very personal appearance of Hal Baud's Olds 88 was achieved almost entirely through a fuller utilization of the car's inherently good lines. After the gingerbread was systematically removed, the car was taken to a body shop for filling in of holes and molding around the headlights. Entire car was lowered by cutting away a portion of the coil springs at each wheel. A more efficient exhaust system was installed, and many engine parts and all interior molding were chromed. Floor mats were added to match a new maroon paint job. Finishing touch will be installation of an IT supercharger, now on order. Baud, a resident of San Francisco, is the grandson of a famous engine designer in France

DATA AND PHOTOGRAPHS BY GRIFFITH BORGESON

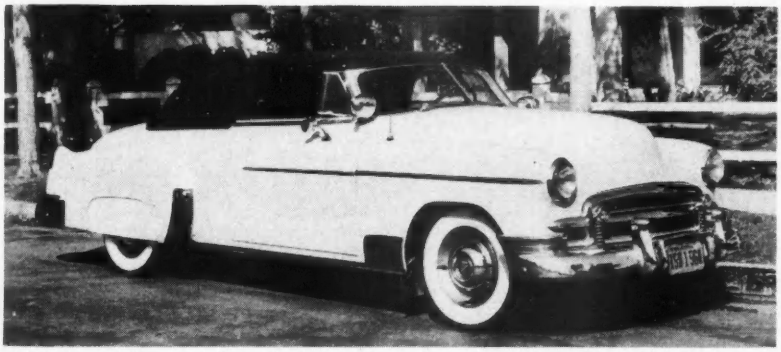
WILLIAM UNGER

WEIRD view of a "General Motors Modification," built by William J. Unger, Chicago, Ill. Car is a conglomeration of GM parts, including '50 Pontiac hood, '49 Buick windshield, '49 Pontiac front fenders, '50 Olds trunk deck, '50 Cad rear bumper, '50 Pontiac doors, '49 Buick front bumper, ½ Pontiac and ½ Cad rear body and fenders, '40 Chevy exhaust, '49 Chevy seats, '49 Olds top, Buick and Chevy instruments, all mounted on a hybrid '49 Chevy and '49 Cad frame. Engine is a GM 6

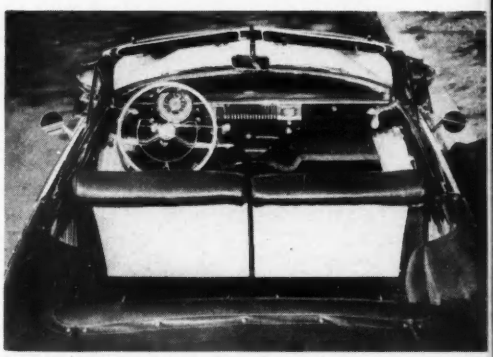
OWEN CRAIN

MERC-A-BAKER, as it is known around San Gabriel, Calif., was assembled with idea of combining good qualities of several cars into one by Owen R. Crain. Owner took a '41 Chevy frame, widened and dropped it, then installed a '46 Merc engine, transmission and differential. A '48 Studebaker Commander business coupe body was mounted with Chrysler body mounts. Cowl section was lengthened, top section removed. Kaiser tail lights are set above bumper on separate brackets

FELIX ZELENKA



WHEN Vern Gullingsprud first arrived in California from Climax, Minnesota in his '49 Chevy, he was surprised at the amount of custom cars. He decided to put in a '50 grille to change the model—and then it began, with one thing leading to another. He had Jerry Jarret weld on tips from Cad fenders, and had a Carson padded top installed. An interesting feature about the right fender fin is that it houses an ignition switch for cutting off all electrical current to the push-button-operated doors, hood and deck. Left fender fin, like Cadillac, houses gas filler neck

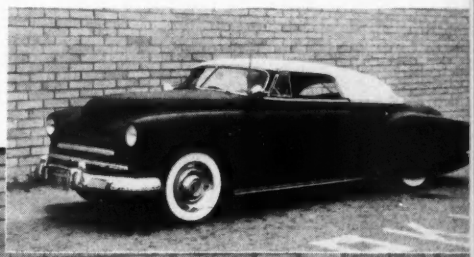


ABOVE—Gullingsprud's custom Chevy, built at a cost of just under $1000, has Fabrilite upholstery, in antique white and maroon, custom designed by Carson Top Shop. Dash is a rich maroon, in sharp contrast to the Mirida yellow exterior paint sprayed on by the owner of car

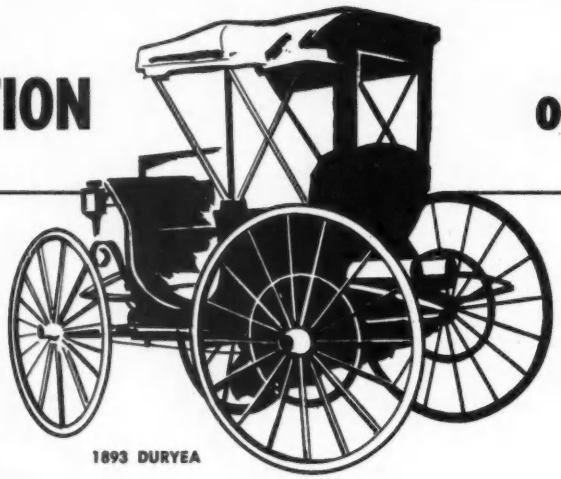
FELIX ZELENKA

CUSTOMIZING of Chevrolets seems to be the rage lately—witness this '49 Chevy (right, above right), tailored for Bill Taylor, of Los Angeles, by Barris Kustom Shop. Has been channeled (10 ins. front, 4½ rear), has tubular rear fenders with Olds lights and three ins. added depth, and grille bars of tubing set in springs and rubber

CUSTOM interior by Gaylord is all leather, with color scheme of purple-gray antique and white. Top was chopped four ins., has full vision rear windows of glass, are removable in sections



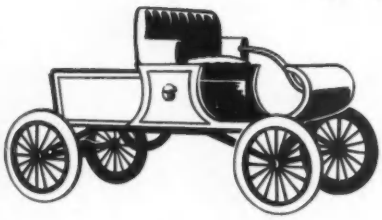
EVOLUTION of an INDUSTRY



1893 DURYEA

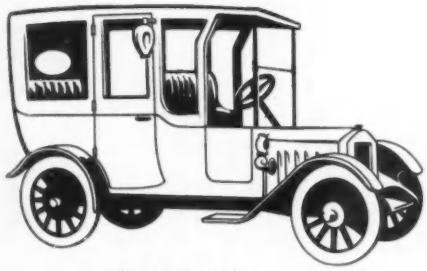
by Lewis B. Simon

DRAWINGS BY M. R. RIGGS



1904 OLDSMOBILE

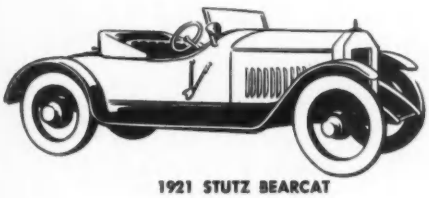
NOTE: In tracing the evolution of the automotive industry, it is impossible to do the subject justice in the short space of one article. We are therefore presenting the story of the modern car's family tree in the form of a series. The author, Lewis B. Simon, has spent much time and effort in compiling this information and makes several grateful acknowledgements to the persons who aided with his preparation at the end of the series. The first in this series is concerned with pre-Revolutionary War days up to the turn of the 20th Century. More will follow.—Editor



1913 CHALMERS

THE STORY leading up to the highly refined modern car is a long and fascinating one; many volumes have been written about the industry's history. Almost any phase, mechanical, personalities, financial, legislative, production, labor, safety or racing would provide a wealth of material.

The scope of this article, however, is confined to the mechanical development of the American car, which is still so broad that it will be possible to touch only lightly on the many landmarks of the varied and ingenious developments. A little noticed sidelight on inventive progress is sharply marked in the automotive story. It is that while the inventor himself may properly be given credit for a specific invention, in a larger sense the circumstances and need force invention. It will be seen that had one man not invented the car, many others working independently would have.



1921 STUTZ BEARCAT

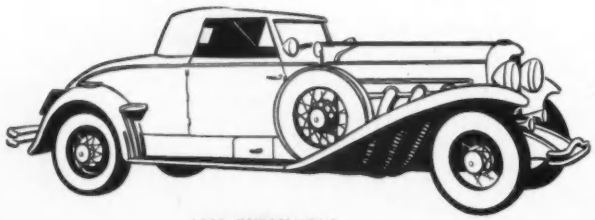
Shortly after the Duryea brothers built the first successful American car in 1893 a fitful hum and rumble spread rapidly throughout the land. It seemed that everyone and his brother was building a horseless carriage. And that expression "everyone and his brother" must have been coined for the automobile industry. In addition to the Duryea brothers, there were the Apperson, Stanley, Fisher, Dodge, Briscoe, Chevrolet, Remy, Studebaker, Packard and Duesenberg brothers, to name but a few. The skilled manpower was available in bicycle shops and carriage makers. As noted, the technical background was available and the demand for something better than bicycles or horses was strong. Thus there was a healthy background for the inventor of the first automobile.

As an aside before cranking up to start the history of our present car, an important detail should be made clear. The detail is that many points in the development of automobiles are not positive. Conflicting "Firsts" in many features were claimed by several manufacturers. It was inevitable that this should happen. A really grand total of over 2,500 automobile manufacturers in the United States seems to assure confusion. In this article, the earlier of conflicting dates is used. Some dates have disappeared completely, and an attempt has been made to insert the event in its approximate chronological place. However, in a discussion of the American car's family tree, it seems only proper to mention some of the more important roots. These roots were in Europe.

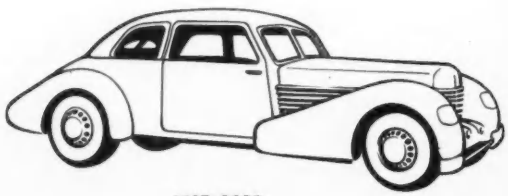
Before our Revolutionary War, the fateful hissing of steam was the first herald of doom for the liveryman. In France, Joseph Cugot built what is believed to be the first self-propelled vehicle. Lacking the differential gearing and other more sophisticated devices, he made his truck a three wheeler. In 1818, Eli Whitney, of cotton gin fame, made one of the many inventions so necessary to the invention of the automobile—the milling machine. In 1828, M. Pecqueur, of Paris, made one of the inventions which became a basic part of millions of motor cars—planetary gearing successfully applied to a steam carriage. Back in England, years later, Robert Anderson Aberdeen built and ran the first electric vehicle. In 1844, August Schrader invented the air valve.

Metalworking practice was outstepping the blacksmith. Machines that later experimenters would take for granted were coming on the scene—the universal milling machine, multiple drill press, turret lathe, vernier caliper and the micrometer. The world was now preparing itself for the noisy entrance of the horseless carriage. Thousands of men were becoming skilled mechanics. Stationary gas (not gasoline) engines were coming into use.

In 1855, Drake developed the use of incandescent metal for ignition. Although "hot tube" ignition turned out to be an alley



1931 DUESENBERG



1937 CORD

as blind as the tube it used, it was widely used by early experimenters.

A great forward stride was taken in 1867 when the U. S. Patent Office granted patents to Dr. Otto and Langen on two gas engines. The first was the elementary two-cycle engine, in which the mixture was compressed outside the cylinder and then forced in; the other engine, a four-cycle compression engine, is used on all cars today. Four-cycle operation still bears the Otto cycle name.

The year 1872 was a significant one in the history of the car. An interesting vehicle that appeared this year was built by Charles Randolph of Scotland. It had the honor of being not only the first self-propelled road vehicle using a steering wheel, but it was also fully enclosed.

In the U. S., George B. Brayton, of Boston, applied for a patent on the first liquid fuel two-cycle engine. This was the big step from all previous internal combustion engines which had used illuminating or similar gases. It allowed fuel to be conveniently carried in the vehicle.

In 1886 Car Benz' early work produced his first "car." It is called a car out of courtesy, for it had but three wheels. The single front wheel was used for power and steering and had the same layout as used by Cugot for his 1769 steam carriage. In this country, Ransom E. Olds (who so recently passed away after having made some of the greatest contributions to the automotive industry) started experimenting with steam cars.

About this time a major problem of chassis layout was solved by Ackerman. Wagons, which served in America as models for early cars, did not offer a satisfactory solution for the steering problem. On the wagons the front axle was swung either to the right or left for steering. This was not suitable for cars for several reasons and to remedy the situation, Ackerman conceived of the principle of the fixed front axle with the wheels pivoted at the ends.

Carl Benz was the first recorded experimenter to take advantage of the Ackerman principle, in 1889 constructing the first four wheel carriage using it, an important advance over his earlier three wheeler. This was also the year of the first electric car in America, built by William Morrison of Chicago. During the same year Dr. John B. Dunlap, of Scotland, became worried about the jarring his son was getting riding his bicycle on the cobblestone streets. His work led to the invention of the pneumatic tire, constructed of fabric covered rubber tubing with a one-way valve.

In 1890 John Wesley Hyatt was working on the design of machinery for crushing sugar cane, the major problem being to design a bearing which would hold up under the tremendous pressures that were encountered. He finally developed and patented the roller bearing which was to become such an indispensable part of the automobile.

In 1891 Thomas B. Jeffrey invented the "clincher" rim. Although the single tube tire was destined to be used for several years, the clincher rim made practical the development of what was then called the double tube pneumatic tire.

The Duryea brothers presented America with its first successful gasoline powered horseless carriage in 1893. Their inventive genius and hard work enabled them to combine the results of experiments from Germany, France, England and here with important ideas of their own. Work was started by the older brother, Charles, and Frank completed the first engine, which used the then popular hot tube ignition. The first engine did not produce enough power to satisfy Frank, so he built a second. This was the first engine in America to embody electric spark ignition. It also had a cast water jacket for cooling, a hand starting device (a crank?), muffler, governor and timing gears for the exhaust valves.

Early in 1894, Frank Duryea, encouraged by the success of his first car, started the second. This car, more complicated than the first, pioneered many devices of the modern car. It had a two-cyl., two-cycle engine, which was later converted to four-cycle operation. Its ignition was spark of the "make and break" type. Duryea borrowed a chain drive and differential from a tricycle and used ball bearings in the rear axle. The first tires were of solid rubber.

Although traffic was quite light, the Duryeas didn't long have the road to themselves. Elwood G. Haynes was required by business to travel a great deal, and dissatisfied with horse drawn carriages, he worked out a motor driven vehicle on paper. He then hired Elmer and Edgar Apperson to build it. Using a single cylinder engine built by Clark Sintz of Michigan, they completed it and ran it on the Pumpkinvine Pike, Kokomo, Indiana, on July 4th. It made six mph and was America's second successful gasoline-powered car. Charles B. King turned out the third car this year, Detroit's first. It had a T-head, four cyl. horizontal block engine, the first "four." The 2¾x5 engine had a five-bearing crankshaft, make and break ignition, Hyatt roller bearings and a wick vaporizer carburetor.

The Duryea Motor Wagon Company was organized in 1895, the first American firm organized for making gasoline cars.

The event of 1895 that gave countrywide publicity to the new contrivance was the Thanksgiving Day Race sponsored by the Chicago *Times Herald*. It was a severe test, snow and mud making the going pretty tough. Two out of six starters finished, Frank Duryea winning, followed by a Mueller-Benz. The 5.05 mph average over the 52.4-mile course was enough to win easily. Even though America did not have the industrial activity that existed in England and Germany or the network of good roads that existed in France, many men here caught the fever and threw themselves into the development of the car. If necessity is the mother of invention, the auto must look to bicycling with respect as its father. In the 80's and 90's bicycling had become a national craze, and clubs all over the country were clamoring for better roads. Bicycle shops sprang up all over and bicycle wheels and chain drives supplanted buggy wheels and factory belt drives on cars. From bicycle shops came many of the first car builders and dealers. In 1895 there were at least 50 full fledged experimenters in the automotive field. Those who at present complain of the mechanical similarity of cars would have been in their glory. The majority, about 24, were conservative and used gasoline, kerosene or ether for power, others were more daring, 12 plugging for electricity, 11 going all out for steam, and at least a half dozen economy minded souls using spring wound motors! Although lovers of variety might not complain about rewinding the spring every three miles, they would have had to face the fact that the overwhelming percentage of all varieties was pretty inadequate for anything.

When things started, they started fast. Right on the heels of the Duryeas and Appersons, seven others put in their appearance. In 1896 more newcomers appeared. Vincent G. Apple, a man who was to exert great influence on electrical components, built an ignition dynamo, or magneto. The Appersons built their second car, this one having two opposed cylinders, a four-cycle, valve-in-head, delivering four horsepower. Aluminum was used in engines for the first time, being the material for the crankcase. J. Frank Duryea, now an oldtimer in the business, built his third car. It was so satisfactory that 13 more were constructed from the same drawings, the first time that more than one of a model had been built in the U. S. It was the first indication that an industry might develop from the noisy carriages.

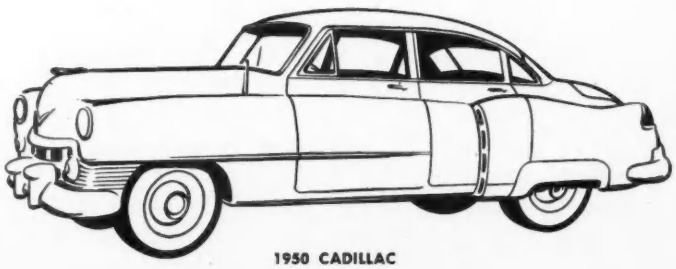
Another indication was the large group of different experimenters who made their first appearance this year. Two of them achieved some prominence later: Henry Ford and R. E. Olds.

In 1897 Francis E. Stanley watched a very disappointing auto "race" in Massachusetts. The entries were gas cars that would not run and electrics that wouldn't run fast. Going home he decided to build one himself. With his twin brother Freeland, they built and sold the first successful steam rig in this country. The two-cyl., 2½x3½ steam engine, operating at 250 lbs. pressure, put out four horsepower. With its 48 in. wheelbase and 600 lb. weight, it gave 25 mph. The same year John Wilkinson designed and built the first air-cooled engine, a four-cyl., valve-in-head, later used in the Franklin. Pope-Hartford came out with their first car, which was this country's first using left hand drive.

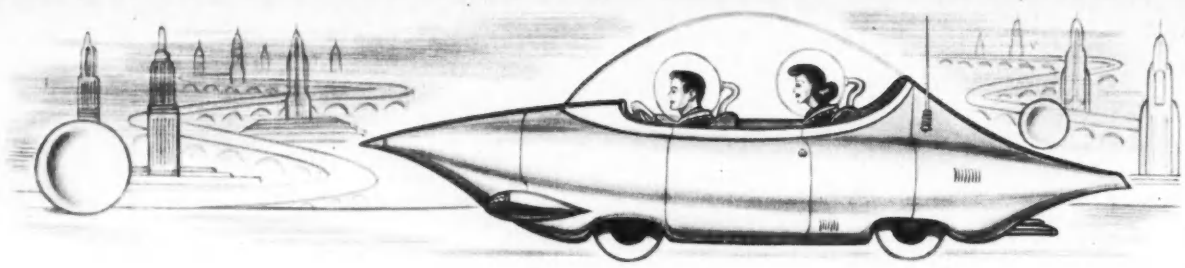
In New England, Sterling Elliot attended an exhibition of horseless carriages held in a ballroom. As the cars circled the wooden floor, he was struck by the loud squeals the tires made. Looking closely he saw that although the front wheels were pivoted in the right direction for the turn, they were not pivoted the exact amount to allow them to roll freely without skidding. An ingenious inventor in several fields, Elliot soon defined the problem. The steering geometry would have to make the wheels parallel while going

(Continued on page thirty-two)

1947 STUDEBAKER



1950 CADILLAC



IT WON'T LOOK LIKE THIS

by David H. Ross

THOMAS J. MEDLEY

NOTE: David Ross, an industrial and free-lance designer, has been connected with automotive design for the past 20 years—in his words, "he practically grew up with it." In this article he lends his insight and background (having worked under Ralph Roberts, head of the design section at Briggs Mfg. Co., Detroit, where he worked on both custom and production bodies by Le Baron) to a subject that is always interesting—the car of tomorrow. Here, Mr. Ross explodes many myths that our Sunday supplement artists have envisioned.—Editor

NEARLY ALL of us like our possessions to be different from those of our neighbor's. We like them to express some individuality, but we don't like them to be ridiculed. For that reason few of us care to break with traditions—suddenly and completely. We like to make the break gradually, to educate ourselves as well as our neighbors to the change.

Though you may not have realized it, the break with tradition in automobile design is taking place right now—if it has not already done so. It is a break which is being widened slowly, for your sake and for mine. As far as appearance is concerned, the engineers and stylists in the industry could give us the car of tomorrow today. But you wouldn't want it because the transition from that to which you and I have been accustomed would be too great. *I* wouldn't want to be seen in it, and the two of us combined as John Public wouldn't buy it.

At one time or another various manufacturers in the industry have presented a car to the public which, from the standpoint of design, was much in advance of its contemporaries. It was too much in advance—we wouldn't buy it in sufficient quantities to permit its continuance in that guise. To illustrate the truth of this statement: back in the twenties, Jordan came out with a car on which the body sides were deep, moldings had been eliminated, the windshield was both slanted and V-shaped, and the cowl had been materially shortened. We wouldn't accept it.

At the turn of that decade, Buick came out with a car on which the body sides were deep and possessed a convexity of contour. Moldings were eliminated and the conventional radiator shell, as such, was beginning to lose its identity. We laughingly called it the "pregnant Buick" and, as buyers, shied away from it.

Later, Chrysler came out with the "Airflow" models. The body sides were deep, moldings had been eliminated, the radiator shell had disappeared, the hood extended back to the windshield, fenders had become part of the body itself, and the runningboards had been lost in the shuffle. We looked at the Airflows and were impressed by all of the advantages claimed for their design (which incidentally were true) but we didn't buy many of them. Perhaps each of us was waiting for the other person to buy one first.

Take a look at your car the next time you go out to it. If you bought it since the war, its body sides are deep. Its windshield is slanted and V-shaped or curved. The radiator shell has disappeared, and the hood extends back to the windshield. The fenders have been incorporated in the body and the runningboards have been eliminated. Moldings are limited in use or have been done away with entirely. Before you step into the car, take another look at those body sides. They possess a convexity of contour that makes the "pregnant Buicks" look anaemic.

Your car today is a forecast of the coming event. The story it tells is beautifully illustrated—if you know what to look for. Already some features of your future car have been incorporated in present design. The almost universal use of independently sprung front wheels undoubtedly will be continued. Your car of tomorrow, however, will have independently sprung rear wheels as well. The practice of building body and chassis in a single unit, instead of a separate frame for each, will be the rule rather than the exception. Engines will be placed in the rear in many cars, though there will be a variety of installations. Some will be mounted crosswise and some lengthwise. Engines will be located ahead of the center-line of the rear wheels on some, and in back of it on others. Some cars will continue to have the engine mounted in its present location.

The experience of the rear-engined Auto-Union cars in European Grand Prix racing, and the rear-engined Harry Miller cars at Indianapolis indicate that a rear-engine layout is not as desirable as many suppose it to be. The drive in all cases, however, will be transmitted through automatic torque converters to the rear wheels. Aircooled engines may reappear on the scene, but it is much more likely that the high speed, lightweight diesel (see diesel story, page 18), and the gas turbine engines will make their appearance. The center of gravity on the car is certain to be lowered and, with few exceptions, the overall height of the cars will be cut down to 60 inches. In some of the sport cars is will be as little as 56 inches. Road clearance, which on most cars today is about nine inches, probably will not be cut to less than eight inches.

Even the heavy six- and eight-passenger cars will be capable of cruising at 80 mph, while their maximum speeds will be considerably higher. A few really high speed jobs will be on the market which will be able to maintain speeds in excess of 120 mph. Fuel consumption on gasoline engines will be slightly lower than it is today. Rumors, however, of the average car getting from 30 to 40 mpg are rumors born of wishful thinking. The greatest economies will be effected in reduced service charges, oil consumption, and tire replacements. Brakes will be self energizing, self aligning, self adjusting (with automatic take-up to compensate for wear) and the brake linings will probably last the life of the car.

Undoubtedly your car of tomorrow will be equipped with tires that are vastly superior to those now in use. The new tires are almost certain to be made of synthetics instead of rubber. They will be unaffected by oil and grease, more resistant to internally generated heat, and impervious to climatic conditions. The casings will be blow-out proof, puncture proof, and will eliminate the use of an inner tube. Your car of tomorrow will provide you with greater comfort, speed, economy, and safety than anything on the road today.

But what will it look like—what form will it take?

The future trend of architectural design (as is evident today), the future trend of furniture design, and of industrial design is functional in character. So it will be, undoubtedly, in automotive design. This is not based on premise but on the fact that functional design offers the most effective use of available materials. It is also based on the fact that *good* design, from an engineering point of view, is functional in character.

Fabricating methods and assembly techniques have advanced a long way since the early days of motorcar manufacture. They will continue to advance. Originally moldings on an automobile body were used to conceal unsightly seams. Their decorative value was purely secondary. As manufacturing difficulties were overcome, permitting doors to be fitted more closely, body panels to be joined without visible evidence of the joints on their external surfaces, moldings became fewer in number and changed in character. Their ability to conceal an unsightly seam was no longer needed; their function changed. The bulbous, or "blister" molding was developed to lend contours and accents to an otherwise flat and uninteresting surface. Hence the effort 10 and 15 years ago to develop a convexity of contour in the body panels. That those efforts have been successful is evident in the absence of moldings today.

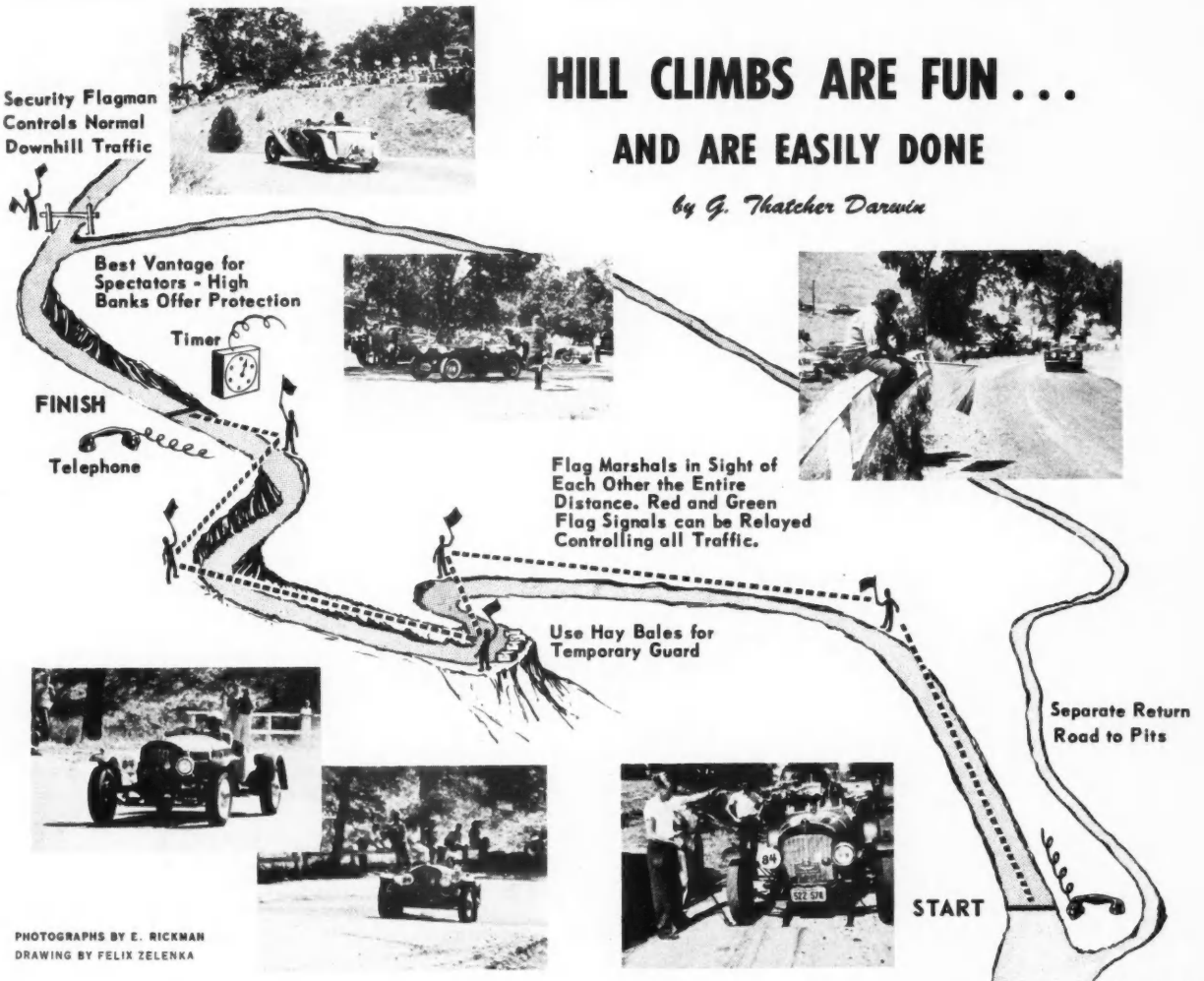
Why then do our stylists and Sunday supplement artists envision for us monstrosities of glitter and color as the car of tomorrow? In a lather of enthusiasm while conceiving a design, why do they forget one thing? Mold it in whatever form you will, dress it up and paint it as you wish, the inescapable fact remains that the primary function an automobile offers is transportation. It is not a pullman to be slept in, any more than it is a house on wheels to be lived in. R. E. Olds clearly perceived this truism many years ago. There is no logical reason to suppose the primary function of an automobile will ever change. Fifty years from today, if the

(Continued on page thirty-two)

HILL CLIMBS ARE FUN . . .

AND ARE EASILY DONE

by G. Thatcher Darwin


Security Flagman Controls Normal Downhill Traffic
Best Vantage for Spectators - High Banks Offer Protection
Timer
FINISH
Telephone
Flag Marshals in Sight of Each Other the Entire Distance. Red and Green Flag Signals can be Relayed Controlling all Traffic.
Use Hay Bales for Temporary Guard
Separate Return Road to Pits
START
Pit Area
Spectator Parking

PHOTOGRAPHS BY E. RICKMAN
DRAWING BY FELIX ZELENKA

IN THE dawn of motoring, most amateur competition took the form of impromptu match races between enthusiastic owners of the new horseless carriages. Before long the "smart set" had pretty well sorted out the performance of their cars and the ability of their drivers, not the least of which was to persuade their machines to run at all. It was inevitable that when the novelty of the sport began to pale, the stouter hearts would work out some variation, a different kind of game to play with their new toys.

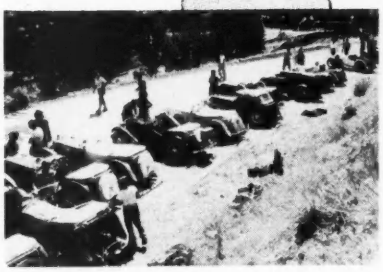
History doesn't reveal the date of the first organized hill climb nor the names of the "sporting automobilists" who urged their chugging mounts up some rutted wagon track while a trusted "neutral" held his watch on the contest, but that now-forgotten event began a fascinating struggle against split seconds still being fought all over the world.

A speed hill climb is simply a timed run up a grade which includes curves of different types: the cars are run one at a time up the course, and although the driver has no personal antagonist, he competes against two relentless opponents—the hill and the clock.

The hill presents an almost academic problem, challenging the driver to find the best solution, and offering him no chance to redeem a mistake. By contrast, in road racing a driver may lose ground by taking a curve too wide only to have his mistake cancelled out if his nearest opponent makes a similar miscalculation on the next bend. In hill topping one doesn't get such a break. One misjudgement, too much throttle at the critical point, a couple of feet out of line in entering a bend, or the injudicious use of "urge" in getting away from the starting line and the climb is spoiled. The essence of this game is precision driving; the fact that other drivers may make errors, is poor consolation.

Although most of the world famous climbs have classes for both racing and sports cars, the speed hill climbs are primarily the province of sports cars. The reason is that this is the type of event in which an enthusiastic amateur can compete with very little personal risk and for a modest financial outlay, but there's no shortage of thrills! On a really sporting climb the driver gets his full share of adventure intensified and crammed into a few exciting seconds. Once he leaves the starting line, there's no question of conserving the car; he must go as fast as he dares all the way. Sidney Allard, producer of the famous Allard sports cars, and himself British Hill Champion of 1949, sums it up in this pearl of understatement, "In hill climbs you don't get a great quantity of motoring for your money, but it's all *eventful* . . . !"

In spite of this universal policy the mechanical casualties are low, because the car is usually only putting out its maximum for a relatively short period of time. If your sports mount is your daily transportation machine as well, you needn't worry too much about blowing it up in a hill climb. At any rate, the few seconds of violent action will impose less wear and tear than a road race.



Another feature of this sport that appeals to the amateur enthusiast is the high safety factor, *provided the course is carefully selected*. The very fact that only one car is on the course at a time gives the driver a big break to start with. If you "lose it" on a turn, you are likely to suffer only embarrassment, and you won't have to worry about cars behind driving over you before you can restart.

If you get into trouble you'll find that the hill is almost always on your side; that is, the gradient and the fact you probably won't even be in high gear, will help you to reduce

(*Continued on page twenty-three*)

BILL SHIPLER

DIESELS at SPEED

CUMMINS DIESEL RECORDS AT INDIANAPOLIS AND BONNEVILLE

. . . HERE'S THE BACKGROUND, THE WHY, AND THE HOW

by Griffith Borgeson

THE CUMMINS Diesel racing car made history this summer. First, it set new diesel speed records at Indianapolis by qualifying for the "500" at an average speed of 129.208 mph. Then, the same machine hit 165.23 at Bonneville this September, shattered four international diesel records, and set a total of six, in all.

This new peak in diesel performance obviously means that important new steps have been made in increasing the output of the compression-ignition engine. It also means new vindication for Rudolf Diesel's monumental confidence in his "Rational Thermal Engine to Replace Steam Engines and Known Types of Internal Combustion Engines." Mercedes-Benz has already, with their smooth, silent diesel passenger cars, captured international economy records, and French MAP and Yacco diesels have rolled up an impressive string of long distance records. It was in the Cummins tradition to prove that the diesel engine can produce real straightaway speed as well, and to create another landmark in the evolution of diesel motive power.

This evolution has been analogous to that of the gasoline engine in many ways—and not the least of these is a grand indifference on the part of the industry as a whole to racing, that is, to the idea of improving the breed through the trial-by-speed technique. It's even been suggested by old guard diesel experts that the Cummins achievements "hold no meaning for the industry." This attitude is absurd on two counts: Cummins has, as a direct result of its racing research, completely outstripped competition in the development of the lightweight, high-revving commercial diesel engine; and the firm has done more to make the American public diesel-conscious than the balance of the industry.

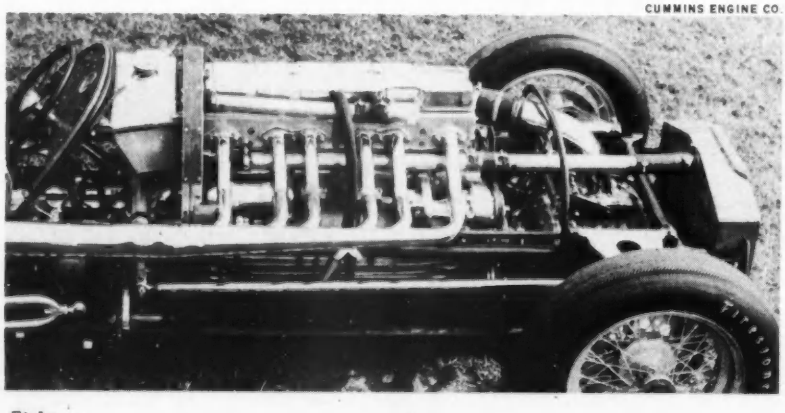
It was primarily to attain the latter objective, and to demonstrate the speed and stamina of diesel powerplants that C. L. Cummins first set his sights on speed records. He'd been building diesels for 19 years then, had seen the advantages of diesel power for road transport, had made startlingly economical runs in a Cummins-powered Packard. The result of this line of research was the Model H engine, which Cummins installed in a Duesenberg Speedster. Run at Daytona in February of '31, the then-really-sensational car caught the world's eye by clipping over the flying mile at 100.755 mph, a world's record—at a time when diesel trucks were still a novelty. A few months later the car ran at Indianapolis and became the first "500" contender in race history to finish without a fuel stop, and averaged better than 86 mph. To prove economy and endurance, a Model H engine pulled a heavy load from N. Y. to L. A. at a cost of $11.22 for fuel, turned around and covered 14,680 miles nonstop on the Indianapolis Speedway. In '34 another Cummins racer finished 12th in the "500" and the next year set new class records by turning 137.195 at Daytona.

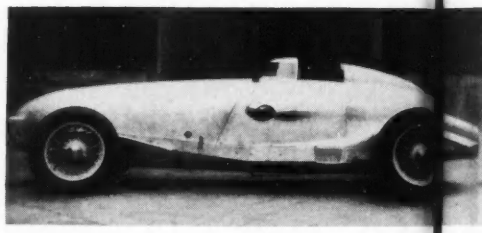
That first burst of trailblazing carried Cummins to the top in the production of diesel road transport engines, and the company settled down to the job of filling orders —for a time.

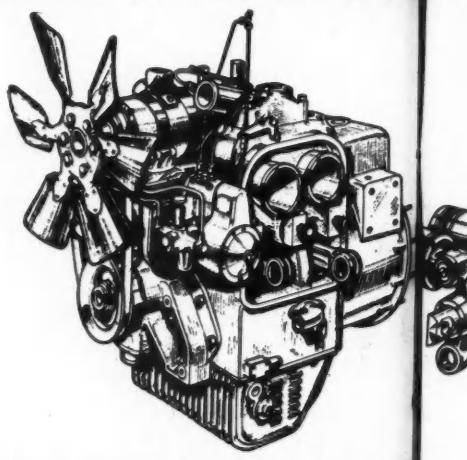
The quest for higher diesel speeds was carried on by England's A.E.C. firm and driver George Eyston. He set a new record for the flying mile at 158.87, and a year later, on A.E.C. equipment again, set at least nine new distance records on the banked oval at Montlhery, France, his best average speed 103.1 mph for 200 miles.

The Eyston records stood until 1949, when

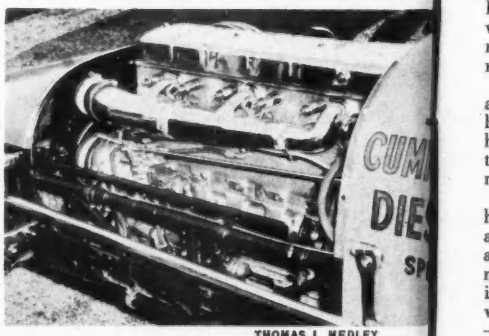
CUMMINS ENGINE CO.







MAP engine is a Roots-blown two-stroke, has two pist per cylinder. Power unit of the record-holding racer velops 125 bhp at 1800 rpm. MAP racer (top) is based a Delahaye frame and running gear. Factory-desig body for this diesel speedster weighs only 103 pou



THOMAS J. MEDLEY

CUMMINS Diesel is 401 cu. in., using a huge positive displacement supercharger, mounted just behind radiator. JBS-600 engine developed one bhp for each 2.47 lbs. of its weight. Note remarkably wide Kurtis tubular frame

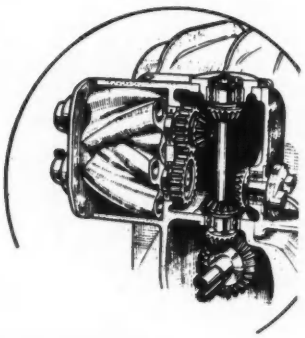
INTERNATIONAL DIESEL RECORDS

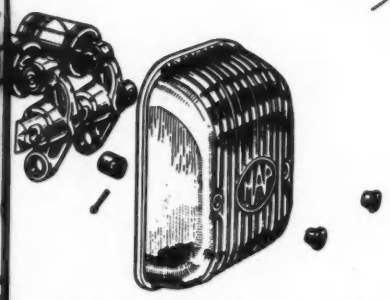
Flying Distance	Cummins Record	Old Record
1 Km.	163.82 mph	159.10 mph
1 Mi.	165.23	158.87
5 Km.	164.25	96.9
5 Mi.	161.92	96.6
10 Km.	147.63*	none
10 Mi.	148.14*	none

*slow, due to limited length of course.

FIRST Cummins racer (right), Duesenberg body and running gear, set records at Daytona, was first car to complete the Indy "500" non-stop

SECOND Cummins racer (below) was 12th in 1934 "500," did 137.195 at Daytona in 1935



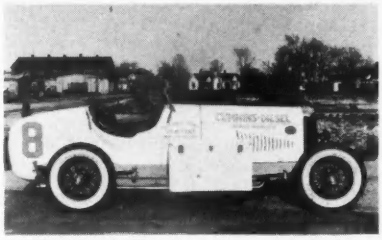


the Manufacture des Armes de Paris, builders of MAP diesel tractors and stationary engines, set out to demonstrate their mobility. They topped the Eyston-AEC record with an opposed four-cylinder tractor engine mounted in a Delahaye racer, averaged 112.33 mph for 200 miles.

And then Cummins entered the picture again, and the story of their latest record-breaker should convince even the most die-hard of the "futility-of-racing" school that there's no greater incentive to quick development than speed competition.

In the past Cummins' speed contenders had not been really competitive at Indianapolis, had been run largely for the glory alone. But in 1949 a handful of new, experimental engines was run off—blown 401 cu. in. sixes pulling 150 bhp at 2500 rpm and with a brake horsepower to litre ratio of 23:1—and these engines, the JBS-600s, had the performance characteristics to provide a real challenger for speedway competition.

Late in '49 the Research Department at Cummins was given the project of producing a racing version of the JBS-600 to run in



1950's "500." The Department made hasty calculations, concluded that the experimental commercial engine could be made to develop 225 bhp and pull a racing car at a qualifying speed of around 127 mph. Kurtis-Kraft of L. A. responded to a rush call for a car, added four inches to the wheelbase to accommodate the longer-than-offy JBS-600, and the Cummins Diesel Special was on its way. And then came the problem of making the engine's actual output equal scratch-pad prediction.

First, Cummins engineers mounted the stock commercial engine on a test bed, stripped the governor, over-speed, and fuel feed stops, and deliberately tested the mill to destruction. It pulled 187 bhp at 2700 rpm, only 90 at 4000 rpm, and at that point the rods burned up. Something important had been learned: the rods themselves would hold together, and the valve gear would operate, though with bad breathing at 4000 rpm.

Immediately the engineers made detail changes in the rod bearings for better oil flow, added an auxiliary oil pump, and replaced the two-valve-per-cylinder head with a four-valve job. With this set-up the engine held together, breathed like a baby at 3600 rpm—the figure used for further development. By innumerable refinements the first estimate of 225 bhp was easily passed, and 300 bhp at 3600 rpm finally reached.

The next problem was reliability. The Research Department rigged a test bed operation cycle duplicating as closely as possible the conditions of the Indianapolis 2½-mile track—an acceleration period of 10 seconds and deceleration of 20. The engine was set at 300 bhp with a constant dynamometer load, and the speed throttle-varied between 2800 and 3600 rpm. The "tuned" JBS-600 ticked through six hours of this in a breeze.

And now having achieved the performance and reliability they were after, the engineers set about pruning weight. Every possible part of the engine was duplicated in aluminum: cylinder block, head, pumps, brackets, covers, and so on. There was trouble at first with the aluminum engine because of clearances opening up with rising temperatures. For example, steel push tubes operated the overhead valves, and tappet adjustments varied impossibly with engine heat until solid aluminum rods were substituted. But the bugs were rooted out with efficiency and dispatch, the original cast-iron mill's output duplicated, and the six-hour endurance cycle successfully passed.

The racing version of the new commercial engine differed from its direct ancestor in only a few ways. Light metal had been substituted, plus the four-valve head, and alterations in the lube system and piston crowns naturally had to be made to cope with the much higher rotational speed. But crankshaft, bearings, connecting rods, cylinder liners, pistons, rings, supercharger—all were production parts. What really made possible the remarkable high rate of rpm was a new fuel metering system developed by Cummins' research boys. The total result—the "tuned" engine that was entered in the "500" achieved the remarkable output of one hp for each 2.47 lbs. of engine weight and 53 bhp for each litre of engine displacement.

On April 4 of this year the new engine

(Continued on page thirty-one)

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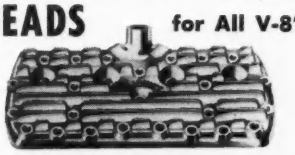

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by Harry Cushing

DETROIT, MICHIGAN—You can expect to pay a higher price for your new car in 1951. . . . The trend is being established by the independent producers as new models are introduced. Competent observers within the industry predict the Big Three will follow suit. . . . Those increased price tags result from the fastest wage spiral in automotive history. In a three-week period last August and September nearly 800,000 workers were awarded increases, plus other benefits such as pensions and improved vacation allowances. . . . Ernest R. Breech, executive vice president of Ford, explained it this way when he announced the Ford-CIO wage agreement: "In the long run, wage increases can be financed only out of increased production. It is clear that increases in wages in excess of actual gains in productivity must be reflected ultimately in price increases if the company is to maintain a sound economic position." . . . What is true at Ford applies to other manufacturers, so the price increase parade is now on. Despite an announced reduction on its larger cars, Packard has boosted smaller models an average of $87. Kaiser-Frazer lines have been upped $10 to $120; Nash's 1951 cars have gone up from 1.5 to 5 per cent; and Willys-Overland has increased prices from two to eight per cent.

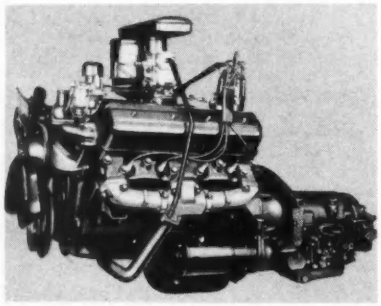
WAR PRODUCTION: The armed forces continue to look to the automotive industry

NEW HUDSON Hornet sports different grille and spectacular in-line six engine of 145 bhp

for help in the building of vital war material. Most spectacular project now getting under way is the deal between the Ford Motor Company and the Air Forces, a contract valued at between $50 and $75 million. . . . Ford is taking over the giant Dodge Chicago plant of World War II fame, the same facility which Preston Tucker used in his attempt to get into the automotive business. The company will build Pratt & Whitney aircraft engines for the sensational B-36 bomber. . . . Buick is currently negotiating with the Air Forces to build a Pratt & Whitney aircraft engine. It will be manufactured in a new factory at Flint, Michigan. . . . Packard has received a naval contract for $4 million to develop diesel engines. . . . In the ordnance field, Cadillac has been asked to supply $2 million worth of parts for engines and transmissions. These units will be designed for light tanks now in use. . . . Speculation is rife in Detroit on the role Kaiser-Frazer will play in the war production picture. There are many indications that K-F will become a ship builder, utilizing a portion of the mammoth Willow Run plant, but not interfering with passenger car assembly lines.

CIVILIAN PRODUCTION: As the fourth quarter of production reaches the midway point, output is slackening in Detroit. Changeover to new models plus tight materiel supplies combines to cut manufacturing activities. Nevertheless, *Ward's Automotive Reports* reveals that in the first nine months of the year, the industry turned out one car or truck every two seconds. That herculean effort has resulted in factory sales running more than one million units ahead of the comparable period last year. General Motors and Ford report the most spectacular production figures, but independent manufacturers have made important gains. Before the war, the Big Three accounted for more than 90 per cent of all car sales. Today, they are selling slightly over 85 per cent of cars built. . . . Although standing far down the sales list in 1950, Kaiser-Frazer has laid plans to become the fourth largest producer of automobiles. Its current schedules call for building 1600 cars a day, a large percentage of these being the new low-priced Henry J ($1300 f.o.b. Willow Run). At its present production rate, K-F is making more cars than any other independent producer. If it can maintain the output, over 360,000 cars will leave Willow Run in 1951, and K-F will grab the number four spot in the United States. All told this year, the industry has built more than six million cars and trucks in the first three quarters. That is more than were produced *annually* in all but one of the last 50 years. Viewing 1951, however, industry experts believe that production will drop about 10 per cent over the current rate. Material shortages, labor shortages, war production and a lessening demand will cause the decrease.

MATERIALS: If the present fairly critical shortage of nickel continues, you can look for the industry to cut down on chrome trim. Even though new models are liberally garnished with chrome decoration, the industry is using the metal with the hopes that the critical condition is only temporary. Chrome depends upon the availability of nickel, but the Army is stockpiling the metal at a rapid rate in the event of trouble. According to one Detroit expert, its share is an important portion of nickel production, and it is leaving the civilian market very short. . . . As predicted in last month's MOTOR TREND, the federal government has

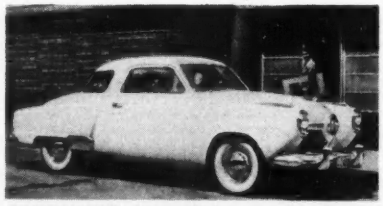


ANOTHER valve-in-head V-8 powers '51 Studebaker Commander. Rated hp is 120 @ 4000 rpm

ordered a cut in the use of new rubber, both crude and synthetic. The slash amounts to 17 per cent, based on the peak reached in May and June of this year. In Akron, Ohio, tire companies are rushing to utilize new processing methods and compounds in an all-out effort to make the rubber supply stretch to cover the cut. . . . Automobile makers are beginning to accept the fact once again that materiel problems will beset the industry for many years to come. In recent weeks, screws, nuts and bolts were in sparse delivery to factories. Some car firms were forced to ship vehicles into certain areas minus directional signals, stop-and-tail-light lenses due to shortages of soda ash. . . .Very shortly you are apt to hear about copper becoming scarce, due also to the war production program in this country. There just isn't enough of everything to satisfy a double economy, i.e., simultaneous war and civilian manufacturing.

LABOR: Availability of workers continues to present a mixed outlook in Detroit. There seems to be a sufficient supply of unskilled employees, chiefly because of heavy migration into the motor city from the south and lesser industrialized areas. However, an acute shortage of skilled craftsmen continues, and jobs are plentiful for those who know a trade in the big factories.

NEW CARS FOR 1951: High compression engines hold the spotlight as features of the new cars being introduced currently. Both Studebaker and Hudson have joined the parade as they announced new powerplants with stepped-up compression ratios. Mercury, on the other hand, has seen fit to make mechanical improvements on its present engine, step up horsepower, and feature a new automatic transmission. Of all the new cars reported on this month, Mercury is the most changed from a styling standpoint. . . . As revealed by the "crystal ball" in October, Studebaker is presenting a V-8, valve-in-head engine for Commander models for 1951. Rated horsepower of the new engine is 120 at 4000 rpm. Piston displacement is 232.6 cu. ins. Bore and stroke are 3⅜ ins. and 3¼ ins., respectively. Compression ratio is 7:1. Like other engines of its type, the Studebaker engine is designed so that compression ratios may be stepped up as higher octane fuels become available. The use of premium gasoline is not required at present. The Studebaker Champion engine reveals no major changes except for a modification of the oil pan to provide clearance for centerpoint steering, a mechanical feature standard on all models for 1951. From a styling standpoint, Studebaker continues the lines introduced a year ago. Principal exterior changes are to be found at the front and rear. The grille has been spruced up with a "spinner," while the hood sports a new ornament. Rear end changes are centered on the trunk fittings and the tail lights. Automatic transmissions are available on all Studebaker cars as optional equipment at extra cost. Overdrive is likewise continued as optional equipment. . . . Hudson is currently stocking dealers' showrooms with four new lines of cars for 1951, including a spectacular new model called the "Hornet." The new Hudson is powered by a six-cylinder L-head engine which develops 145 hp, the most powerful in its field. It has a 7.2:1 compression ratio and operates on regular fuel instead of premium gasoline. Introduction of the "Hornet" points up a basic engineering disagreement in the automotive industry. Hudson is firmly convinced that L-head engines are the most practical, and they believe that such powerplants can be designed for compression



STUDEBAKER'S lines all have optional automatic transmission. Same style continued for '51

ratios of 12:1. Other engineers have asserted that when compression ratios go higher than 8:1, overhead valve type engines must be utilized. Thus, Hudson throws out the challenge to the rest of the industry, and stakes its future on the ability of its engineers to continually improve L-head engines. Hudson's "Hornet" has a bore of 3-13/16 ins. and a stroke of 4½ ins., with a displacement of 308 cu. ins. It is pressure lubricated and uses a floating oil intake which permits recirculation of only the cleanest oil. Each of Hudson's lines features its own engines, the other three models being powered by a 128 hp super eight, a 123 hp six, and a 112 hp six for the lower-priced Pacemaker series. All have 7.2:1 compression ratios. The company for 1951 will offer two automatic drives. Hydra-Matic is optional equipment on the Hornet and Commodore series. Hudson's own Super-Matic Drive is optional equipment for the Super and Pacemaker series. This latter transmission is a combination of overdrive and automatic shifting. Stylewise, Hudson is little changed. The front end has been redesigned with more chrome being used on the grille. Rear ends have been smoothed out somewhat. Hudson's styling sales point for '51 will continue to be its so-called "stepdown" design. . . . Mercury introduces its new automatic transmission in the 1951 lines, thus becoming the first division of Ford Motor Company to offer this engineering device. Called the "Merc-O-Matic," it combines a torque converter and a three-speed transmission. The unit is one of three transmissions available in the new Mercury's, the others being standard transmission and standard with overdrive. Several important improvements to the Mercury engine have resulted in an increase in power, giving it a rating of 112 hp. Among these refinements are more accurately balanced crankshaft, selective fit of all main bearings, and a new camshaft which incorporates a triple ramp on the exhaust cam and a longer quieting ramp on the intake. Many striking styling and functional changes have been made in the car. New grille and front end trim, new rear fenders and quarter panels, new bumpers and an extra large rear window are the major exterior improvements. Inside, the cars present new designs in body hardware, trim chrome, upholstery and steering wheel. In addition, there are a number of new color combinations for both interior and exterior uses. Five body styles are offered by Mercury for 1951. . . . Willys-Overland has introduced a new four-wheel drive all-steel station wagon. It is primarily designed for travel in off-the-road areas. The vehicle is powered by a four-cylinder F-head engine,

'51 MERCURY introduces its automatic transmission, a torque converter, with three speeds

developing 72 hp at 4000 rpm.

BULLETIN: As this issue of "Spotlight on Detroit" goes to press, the motor capital receives word that the octane rating of both regular and premium gasolines is expected to drop a few points. This will permit production of larger quantities of high-octane aviation fuel, the report says. Actually, one point was knocked off early this fall by Government request.

(*Continued on page twenty-nine*)

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You may rest assured that I will not be without a Belond Exhaust System on any Ford product that I might own.
Yours very truly,
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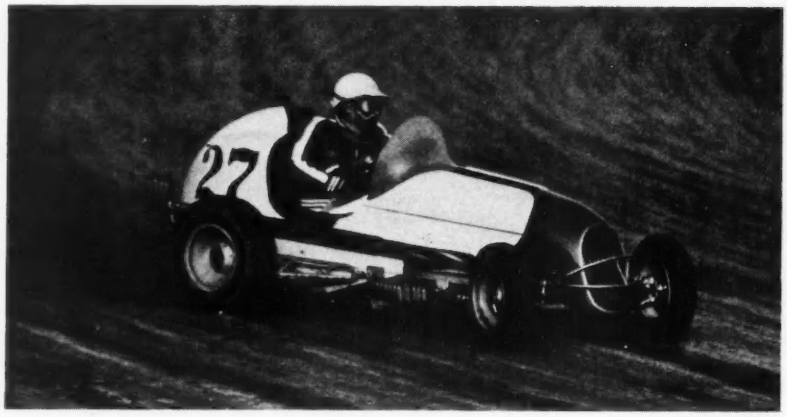


E. RICKMAN

HOTTEST V-8 in midget circles is owned by Vic Edelbrock, and will be exhibited at Motorama

E. RICKMAN

LAST YEAR'S west coast midget championship car, No. 1, an Offy, can be seen at Motorama

E. RICKMAN

A JAGUAR XK-120, fastest production sports car, will be one of the feature attractions

SOME of the fastest cars on wheels will be featured at MOTORAMA, the motorized equipment exposition being held in the Shrine Convention Hall, Los Angeles, from Nov. 16-19.

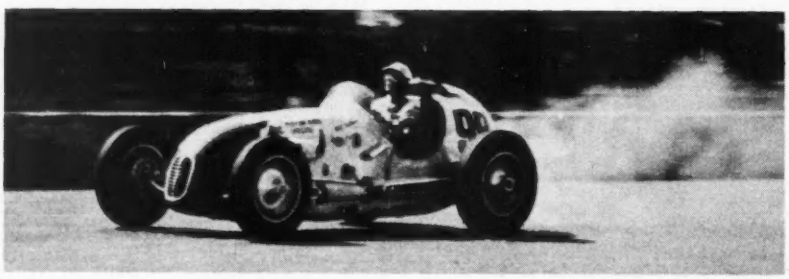
Many of the finest custom-built automotive creations on the west coast, some of which have never before been on public display, will occupy prominent exhibit space. The Sports Car Club of America, with a space allotment of 500 square feet, has planned an attractive display featuring several of their more outstanding cars.

The AAA, leading automotive organization in the United States, will be represented in the show with a very complete display of racing cars, including several participants of the last Indianapolis 500, among which will be the Grant Piston Ring Special (which Walt Faulkner drove) and the Novi-Governor Special chassis.

Cars of ancient vintage, especially those which show the evolution of the American automobile, will be on display to lend a nostalgic note. Nearby will be an exhibit of antique motorcycles. Roland Free's record-breaking streamliner will be on hand.

More than 80 commercial exhibitors will display the newest developments in accessories, parts and supplies.

The show hours of MOTORAMA will be from 11 A.M. to 11 P.M. on Thursday and Friday, November 16 and 17, with the hours being extended from 9 A.M. to 12 P.M. on Saturday, November 18, and Sunday, November 19. The Shrine Convention Hall, in which the show will be held, is located at 700 West 32nd Street, one block north of the Shrine Auditorium.



THOMAS J. MEDLEY

NO. 98, lap-record holder at Indianapolis, will be exhibited in the AAA booth at Motorama

Hill Climbs Are Fun

(*Continued from page seventeen*)

speed quickly. Since most hill climbing is intermediate gear-work you'll find it easier to instantly put the necessary horsepower to the road to keep the rear wheels turning and therefore save those awkward situations that sometimes arise in the middle of a curve.

Hill climbing abroad shares national importance with road racing, and almost every motor-minded country recognizes its annual hill climb champion. In the United States, however, hill climbing has gone through the same "Dark Ages" as other forms of sports motoring and is only now emerging to take its proper place on our events calendar.

In the east the splendid Mt. Equinox event has been established, and in the west, the Gold Creek and Sandberg climbs. Equinox is a six-mile course in the Vermont mountains and rises approximately 3200 feet. The variations of the road surface on this course make it a stiff test. Gold Creek and Sandberg are both short climbs on the order of Shelsley Walsh (1000 yards, and where it has taken 13 years to reduce the record time by 1¾ secs., proving that a hill course must age and mellow).

These and other hill climb meets conducted by sports car groups all over the country are attracting new interest to the game. It is a logical development because the speed climb is a simple event to arrange and does not present organizational problems beyond solution by relatively small clubs. Permission to use private roads or even public highways seems easier to obtain for hill climbs than for straight racing events. Additionally, it is simpler to control the actual running of a hill climb. To those sports car clubs or roadster organizations who may want to consider a hill climb for their 1951 competition calendar, the following suggestions may prove helpful:

1. Don't try to stage too long a climb at first. Short climbs of under a mile are far less tiring to the driver and the cars, and a short course is easier to control.

2. Deliberately choose your course so that the grade and curves will help to keep down maximum speeds. Straightaways don't prove much; it's the bends that provide the test.

3. Make sure that there is someplace for the car to go if it doesn't make a curve; use hay bales if necessary for temporary guards. Never use a curve with an unguarded drop on the outside.

4. Once the course is chosen, don't alter the layout or distance every time it is used. Remember the hill has to mature; when a change is made to the course, there can be no further comparison to existing records.

5. Never permit spectators on the road. Usually there are banks along the course from which they can see better anyway.

6. Make sure you have absolute control over all traffic going both ways on the hill. Post flagmen or guards. Don't rely on "Keep Out" or "Road Closed" signs.

7. It is essential to have continuous communication between start and finish lines. Army surplus field telephones are excellent for this purpose.

8. Insist rigidly on the rule that only one car be allowed on the course at a time. Don't be tempted to "speed up" the running of the event by allowing a car to leave the starting line before the car ahead is off the course.

9. Insist that every car take at least one untimed, practice run up the hill at low or moderate speed before the timed climb.

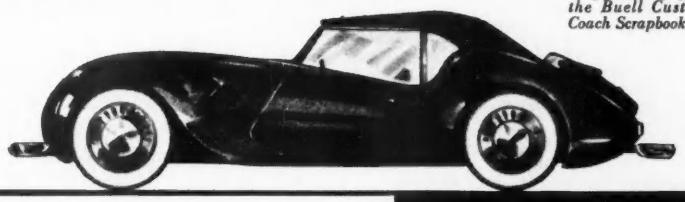
10. If possible, arrange for cars to return to the start by some other route than down the hill itself. This will eliminate confusion.

11. Require every driver to wear a crash helmet and each car to be fitted with an approved type safety belt. Hill climbing is relatively safe, but there is some degree of risk

(*Continued on page thirty-one*)

NEW AIR HORNS WITH VOLUME CONTROL

* *Original design from the Buell Custom-Coach Scrapbook.*



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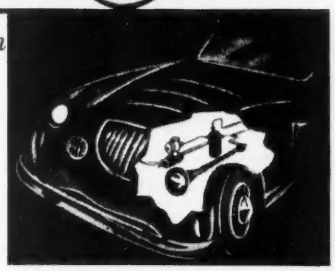

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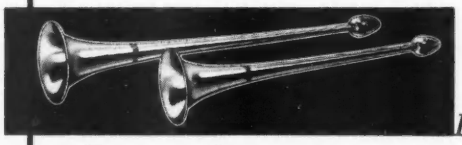

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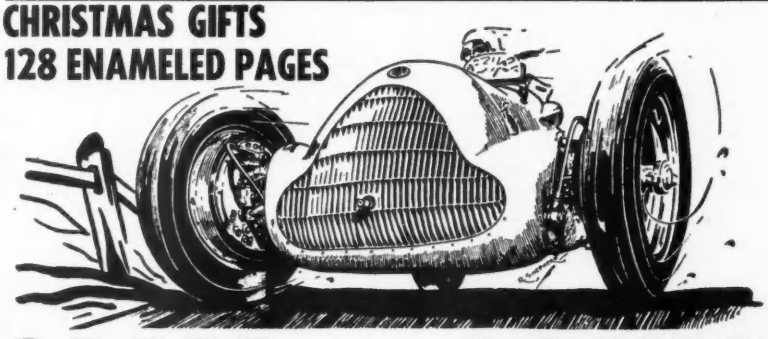

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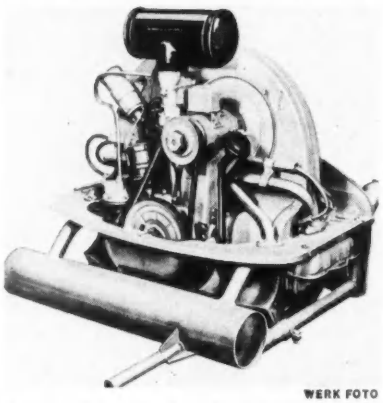
TRANSATLANTIC NEWSLETTER

by A. Devereux

ENGLAND: This year's London Motor Show opened at Earl's Court on October 18, and indicated a striking trend away from the long-adhered-to prewar style. Body lines, it seems, are moving toward the modern and sleek, with foreign derivation, if any, from the tasteful Italians. The formula for British cars that satisfies both home and export markets seems to have congealed: economy, durability, and above all, quality in every detail. And, of course, the British sports car remains its world-beating self. . . . Described not as a sports car but as a "fast touring car" is the new Marauder, based upon the chassis of the lively Rover 75. A shorter, lighter, and perhaps stronger box-section frame is used, the engine's compression ratio is eased up to 7.6:1, and an 0.694:1 overdrive is optional. Twenty-five mph per 1000 rpm are available with the overdrive, and peak of 80 bhp is realized at 4200 rpm. The Rover 75 engine is one of those recent and successful English efforts—like the Lea-Francis—at achieving maximum combustion chamber efficiency along with economy of manufacture by employing inclined overhead valves without resorting to overhead camshafts. The Marauder will sell for around $2600. . . . Sterling opportunity: the Type 35 G. P. two-litre Bugatti formerly owned by the late and legendary Dick Seaman is now on sale for £475, in, the sellers claim, "show condition." . . . While Rolls-Royce has been quietly producing its superlative, proverbially-reliable passenger cars, they've been very awake to the hard-headed real world about them. R-R is far from having to depend for survival upon passenger car sales. The present R-R engine—six-cyls., F-head—is, in reality, one of a family of three: the same highly-refined unit is also made in four- and eight-cyl. versions, and adapted to a variety of commercial and utility uses, including the powering of Army vehicles. Fewer than 100 parts need be changed to convert one of the engines into either of the other variants, making for a phenomenal interchangeability of parts—a matter of some interest to the military. . . . John Heath, the man behind this season's very successful Alta-powered HWM's, announces that he's building a team of new monopostos for next year which will be considerably lighter than the present two-seaters. Mr. Heath is also about to board the sports car band-wagon, perhaps to help in writing off a portion of the race car budget. . . . A kind and prophetic voice sounded in the correspondence pages of *The Motor* (London) before the Silverstone race, that of Alfred Neubauer, manager of the prewar Mercedes-Benz racing team. He wrote, re: the BRM, "Should the first trial fail, neither the designers of the cars nor the public should be pessimistic. There are many cases in automobile history proving that much experience is gained even out of defeats, and that one day victory will be finally won."

CZECHOSLOVAKIA: A life-in-Utopia release from the official Czech news agency reports that without the benefits of Communism 610 man hours went into the production of a Skoda sedan; today the man hour figure is 270. No comment on working conditions in the "workers' paradise."



WERK FOTO

FLAT twin, air-cooled, rear-mounted, ohv Volkswagen engine is a compact unit design

ITALY: Where is the Cisitalia G.P. V-12 for which such high hopes were held this year? First report was that the company was bankrupt; next report, a month or so later, was that they were on their feet again; and the latest, from *Auto Italiana*, is that the only reason the car has failed to perform has been and continues to be a financial one. . . .

WOLFF & TRITSCHLER

VOLKSWAGEN'S packed assembly lines and soaring sales result from a thriving, world-wide export program in almost all countries

Interesting that Nash and Studebaker, both independents, both heavily reliant on advanced design for sales appeal, have recently engaged the services of Italian designers.

GERMANY: Production of the 2½-litre Opel "Captain" has now reached the export stage. Four-speed gearbox has been replaced by a three-speed unit and gear shift lever has been moved to the steering column. . . . Volkswagen announces that they'll be setting up assembly plants in Argentina, Brazil, South Africa.

FRANCE: One of the more persistent rumors is that Hispano-Suiza has a new car ready for production. Just before this year's Paris Show the word was that the new job would be seen there, would have a V-8 engine and front drive. The issue has at last been settled by an official statement from the factory: "We have a 20 hp V-8 of very advanced design in operation but for the present it will not go into production."

SPORT: Nurburg Ring, in the Eifel Mountains (French zone) was the stage for Germany's re-entry into international racing. This year's installment was almost the same as the prewar Nurburg spectacles. The staggering crowds were there, 400,000 strong, massed on the mountainsides, as before the war, with campfires and concertinas. But the Nazis weren't there, and in other years their presence had made the Nurburg a political display. The cars were different too; Germany is not in the business of producing Formula A cars at the moment, and it was a Formula B race. The 14-mile-long Targa Floresque circuit was used, 2½ miles of straightaway and the rest tortuous mountain road. First event was an international sports car race, run in 1.1, 1½, and two-litre classes. Biggest thrill came via Trintignant, in a 1½-litre Simca-Gordini, who in spite of having

TRIUMPH'S 1951 Roadster's Italian lines mark beginning of a trend

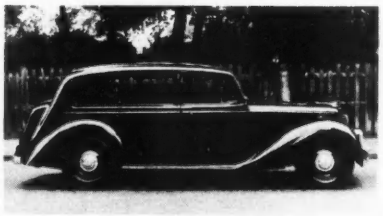
IMMENSE area laid bare when deck raised; decoration conceals filler cap

started 15 minutes behind the two-litre class finished scant feet behind the fastest machine of that group, Fritz Riess' Veritas. Win for the 1100 cc class went to another Simca-Gordini, this one piloted by Robert Manzon, and Walter Schluter's BMW twin-powered Monopoletta won in the 500 cc class. The Formula B event was not hotly contested. Ascari (Ferrari, de Dion rear axle) took the lead at the start, and 16 laps, 2752 turns, and 226.72 miles later he still had it, his winning time 77.67 mph, a new two-litre record for the Ring. Everybody of importance in the Continental racing world was on hand to see the German G.P., including that all-time specialist of the Nurburg Ring, Rudolf Caracciola, who won the event in '26, '28, '31, '32, '37, and '39. . . . Raymond Sommer is dead. The brilliant captain of the BRM team lost his life while piloting a Cooper in a minor French race in September. . . . And Joe Fry, co-creator and very successful pilot of the famous "special," the Freikaiserwagen, was killed this fall in practice for a race

FROM Touring of Milan comes this example of their 1951 "Superleggera" 2½ litre Alfa Romeo

meet. He captured the Shelsley Walsh hill climb record last year after a brilliant apprenticeship on Bugatti and Maserati machines.

CAR OF THE MONTH is an apt demonstration of this year's trend in British car design (see above). Standard Motor Co., whose sales motto is "All That's Best in Britain," has absorbed the best of American and Italian ideas, combined them with sound British practice, and produced a car strikingly at variance with their former rather square, often razor-edged designs. The new car illustrated here is the Triumph "Roadster"—convertible coupe to us. It sports an ohv four-cyl. engine which pulls 71 bhp at 4200 rpm, has just 127.6 cu. in. displacement. Overdrive is optional, top speed of the car



ARMSTRONG-SIDDELEY'S first postwar limousine was a feature of October's London Motor Show. Power is from a 75 bhp, 2.3 litre, ohv six

is an honest 85 mph, and fuel consumption is around 29 mpg. Body styling indicates a definite break from that of the usual English two-seater, so often German BMW inspired. General appointment of the '51 Triumph is suggestive of the light, but very deluxe, Nash Rambler. Top and windows are hydraulically operated, radio and heater are stock. Doors are pushbutton operated and headlights are retractable *a la* Cord, but automatically so. The interior, including dashboard, is finished with that customary British touch, fine leather. Price is unannounced at press time.

BOOKS OF THE MONTH are big news for model car enthusiasts. First new item is

(Continued on page thirty-three)

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THE SPORTING SCENE

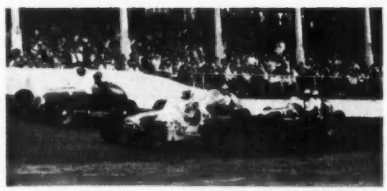
SPORTS CAR track racing experiments by the Midwest Sports Car Club have paid off handsomely, the public turning out *en masse* to see MG's and Singers flip around the ¼- and ⅛-mile ovals at Lincoln and Peoria, Illinois. It looks as though sports car track events will become standard fixtures throughout the area. Naturally, the sensitive, super-maneuverable little jobs are capable of putting on a highly exciting show. If you're interested in participation, drop MOTOR TREND a line for further details. . . . The Watkins Glen tragedy has already had a serious effect on the general public's attitude toward sports car racing, underlines the great responsibility of competition committees in providing nothing short of adequate safety inspection of contestants' running gear, policing of spectators. . . . Results of SCCA's Thompson, Connecticut, meet: George Weaver's Maserati won in the Unrestricted Class, Phil Cade's Duesenberg took the Vintage event, Roland Keith's blown TC MG led two Jag XK-120's to win the Class C race and Dave Simpson and Pete Crocker tied for first, both on TC MG's in Class F. Weaver's Maserati, incidentally, has lopped 1½ seconds from the Laconia motorcycle record. . . . Many SCCA members are stumping for less racing, more sport in what can be called "the sports car sense": rallies, gymkhanas, map runs, and so on. . . . In "Pit Talk," excellent newsletter of the New England Region of the SCCA, we note an interesting point of view expressed by a correspondent, apparently just over from England, concerning super-loaded MG's: "If they (the hot boys) want to hare around in an animated erector set, no limit on revs and pocket book, well, fine . . . But after all, the MG is a good little car and is the poor man's method of transport and outlet for a little exuberance when the opportunity comes along . . . Too many cars are much too fast." . . . At press time, the Pebble Beach Road Race (near Carmel, Calif.) looks more promising than ever with Sterling Edwards, race chairman, stirring up entries from all over. Last-minute participants contact Bill Breeze, 214 Van Ness Ave., San Francisco. Rumor has it that Ralph de Palma may act as steward. . . . MOTOR TREND has been receiving West Coast inquiries re participation in the Algiers to Cape Town Rally.

* * *

STOCK CARS rolled at the Oct. 1 Oakland 300-Lap classic, 25 brand new models in the starting lineup. Woody Brown won the grind in the 1950 Merc driven by Agabashian at the big July show. Johnny Soares, Ford-mounted, had the race his way until the 296th lap, when his throttle linkage went sour—still, he finished second after lightning-fast pit repairs. Marvin Burke's Merc took third money and Plymouths finished 4, 5, 6. High spot of the meet was the amazing performance of an owner-driven "Henry J." Although the little car didn't finish in the money, it ran perfectly for the entire race, handled beautifully in the turns, thanks to light weight and short wheelbase. The crowd of 13,000 was greatly impressed by this demonstration, priceless publicity for the Kaiser factory. What will a really "tuned" Henry J do? . . . Plymouth and Olds were definitely the hottest cars at the Darlington Speedway 500-Mile NASCAR race, with Plymouth making a really brilliant showing. This quickly set a trend in Eastern speed circles with many of the briskest operators swinging to the light Chrysler product. At the Wilkesboro 100-Mile Grand National Circuit Race on Sept. 24, 1950 Plymouths placed 1, 2, 4, 5, 6, 7—only one starting Plymouth failed to come in with the leading pack. The winning car was driven by Leon Sales of Winston-Salem, was the same job Johnny Mantz won with at Darlington. . . . Wally Campbell of Trenton is one of the year's goingest pilots—made fastest qualifying time at Darlington in an Olds 88 at 82.35 mph. Then, at Langhorne on Sept. 26, he slaughtered the track record by doing the hundred miles in 1h17:41.21s. The old record, held by Pepper Cunningham and Red Byron was 1h20:10.40s.

* * *

THE BIG CAR season has been, perhaps, the most frantic in racing history with the national championship title wavering all over the field and the suspense holding until the



BUD WILLIAMS

CARTER, Ruttman, Mackey and DayWalt lead field in start of Dayton, Ohio, 100-lap feature

last chips are down. The lead keeps switching unpredictably and poor Johnny Parsons' struggle to get a car that will keep up with him has been a classic in frustration. This season has also been a record-breaker in terms of staggering numbers of both spectators and entrants. And in spite of huge gates, the purse goes so many ways that plenty of car owners are wondering where their next crankshaft is coming from. . . . AAA 20-lap feature at Dayton was almost rained out.

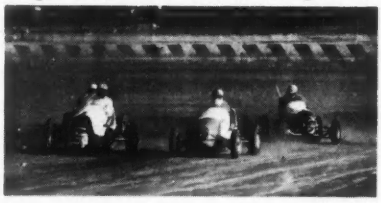
PAGE CORNER

CLOSELY bunched (note Lincoln behind Plymouth) at Oakland. No. 2 Merc (trailing Lincoln) won

sunlight and drizzles alternating. Troy Ruttman made quickest time trial doing the half mile in 21.297 seconds, placed second in his heat, won the main without a fight. Jimmy DayWalt and Bill Mackey were second and third. . . . 70,000 fans turned out at the Syracuse, N. Y. Fairgrounds for the annual AAA 100-Miler on Sept. 9. Jack McGrath of Pasadena, at the wheel of the Hinkle Special, grabbed the lead in the 41st lap, held it for good. His time was a sizzling 1h08:01.33s—only about seven seconds shy of the 100-mile record. Parsons had the worst of luck, his car developing a broken crankshaft on the Big Day. Johnny tried hard to get a spot as relief driver, but none were in demand. Walt Faulkner, another Calif. boy, placed second, Paul Russo third. With his win of the 100-miler at Langhorne, this put McGrath in the record position of having copped two of the season's centuries, brought him $3600 for his latest win. . . . Detroit, Sept. 10, was the scene of the next AAA 100-Miler, witnessed by a crowd of 25,000. Ruttman, in the Bowes Special, shot into the lead when the starting flag fell, held it till the 48th lap when his carburetor float froze. Tony Bettenhausen then took over till the 88th, lost his rear end. This put another Calif. boy—Henry Banks—into the lead, which he held to the checker, winning $4896 for himself and owner Lou Moore. Johnny Parsons got his Jim Robbins-owned Indianapolis car to drive, bad luck struck and he rolled it in the 22nd lap. . . . Sept. 24 saw the action move to Salem, Indiana, for a full card of AAA Big Car races. Hot boys throughout the day were Duane Carter, Bill Mackey, and Jimmy DayWalt, placing in that order in the first heat. The same trio dominated the main event, came in Carter, DayWalt, Mackey. Result of these well-distributed wins is, as has been said, to make point standings suspense-laden and thoroughly unpredictable.

* * *

TRYING something new in speedway competition, Bill White has made a one-mile road race course out of Carrell Speedway's ½-mile track. It now includes a sweeping left turn into the infield from the south turn, a right hairpin turn, another sweeping left, a 90-degree left and long north straightaway meeting the west straightaway. Already using the course have been stock cars, jalopies, hot rods, motorcycles, midgets, and yet to appear are foreign cars and sprint cars. When the midgets ran, several of them had gears in-



E. RICKMAN

FOUR midgets in sweeping left turn into infield

stalled and one used a clutch. It's a rough course on tires, but provides more spectator thrill than the old ½-mile oval.

* * *

A JAGUAR XK-120 ran with hot rods at Cal-Neva's last Lakes Meet, at Reno. The car was running well, and its top speed gives a valuable index for judging the performance of the other cars participating. The Harrah-owned Jag turned in a best time of 101.4 for the flying quarter mile. Best time for a hot rod was made by Binggeli's V-8-powered lakester at 127.0. Altitude at the Reno lake is 4900 feet and the soft surface gives poor traction—two key reasons for higher speeds not having been attained. G.B.

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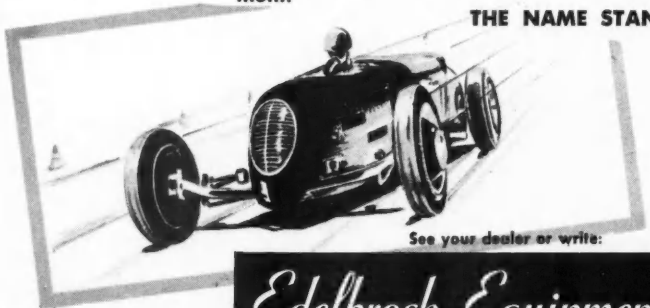

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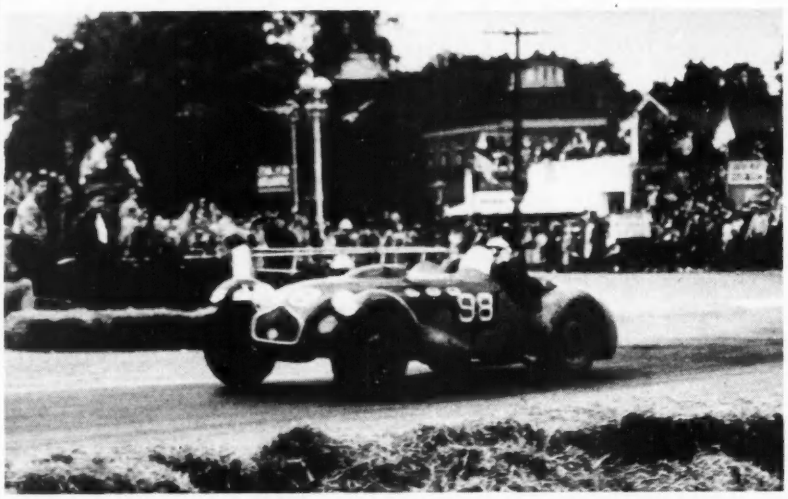
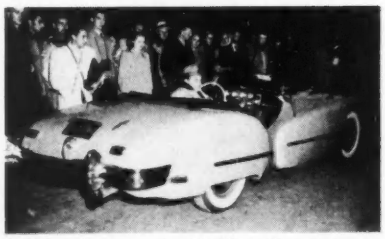
WATKINS GLEN GRAND PRIX



CORNERING at foot of Old Corning Hill is Erwin Goldschmidt (Allard-Cadillac), who averaged a new record 72 mph for 99-mile Grand Prix. He lined up in 24th in standing start and was in sixth at end of first lap. T. L. H. Cole (Allard-Cadillac) flipped at Thompson's Corner and Goldschmidt took over, passing Bill Milliken (Bugatti Type-54), Fred Wacker (Allard-Cadillac) and Briggs Cunningham (Healey-Cadillac). Wacker took over second on lap six, continued to push Goldschmidt through lap 11, when Cunningham took over. On lap 14 Cunningham was clocked at 5:17.5 for the circuit, 11 seconds faster than Goldschmidt, but nearly a half lap behind. Goldschmidt later stated that at no time did the hopped-up Cadillac-Allard falter



MOST unique car in Watkins Glen Concours d'Elegance, for modern, vintage and veteran non-racing machines, was the Rogue, prototype of a car which Robert Monroe, NYC, hopes to produce on a one-a-month schedule. The engine, a 1950 twin carburetor Cadillac, develops 220 hp, with 8.5:1 compression ratio. The car has a 119 in. wheelbase, weighs 2800 lbs. and its designer claims it to be safest car on the road, as it will come stock-equipped with safety belts and shoulder harnesses. It has oversize, self-energizing Dodge brakes, Hydra-Matic transmission and is being produced with the idea that attractive parts from standard model automobiles can be used in customizing to keep prices down. Selling price, about $5000

SMALLEST entry in Concours d'Elegance was a toy Austin roadster, in which a two-cycle, two-cylinder, Maytag engine was installed, with a Vickers hydraulic transmission originally designed for an aircraft bomb turret. Car is owned and was driven by Shirley Watson, of Arlington, Va. Total cost to power car was $150

Text and Photographs by H. Wieand Bowman

THE THIRD annual Watkins Glen Grand Prix was, for the first time, an international event and the only motor race in America, aside from the Indianapolis 500, to be so recognized. In its international aspects, the Watkins Glen event was a disappointment for other than two Canadian entrants driving MG's, the contestants were as domestic as those to be found at a local modified stock car event or roadster race. Neither Leslie Johnson, the British champion, nor Lord Selsdon, co-winner of the 1949 French LeMans 24 hour race, competed, both of whom were to be entrants.

The day actually had two stars: one, Erwin Goldschmidt, winner of the 99-mile Grand Prix and runner-up in the Seneca Cup race over the same distance, and Ted Tappett. The latter name was never mentioned on the public address system, nor was he listed in the day's program of events.

Tappett's influence in the racing world has been felt by the paid spectators for the past five years or more, yet not more than a handful of the 125,000 guests of Watkins Glen knew Tappett's name nor realized that he played an important part in the day's events.

At Bridgehampton earlier this year, T.L.H. Cole, Jr., trimmed a field boasting some highly touted Healey Silverstone's, Ferrari's and Frazer Nash's to open the eyes of the sports car racer to the potentialities of the FT-390 220 hp Cadillac in an Allard body and chassis. At Watkins Glen, Ted Tappett (Cadillac-Healey) further opened the eyes

of the sports car enthusiasts when he drove from 21st spot at the start of the Seneca Cup race into third at the end of one lap, moved into the lead at the end of the third lap and rolled home an easy winner.

As Phil Walters, a last minute substitution for Briggs Cunningham, Tappett was a surprise winner to many. Actually his greater driving experience was obvious on the course as was the superior performance of the Cadillac-powered Healey. This car, although finishing second in the Grand Prix event, was one of the most interestingly setup cars in competition. It has a dual manifold and twin carburetors with compression ratio altered to 9¾:1. With standard gas it reportedly gets 260 hp @ 5000 rpm.

The Briggs Cunningham LeMans Aerodynamic Cadillac, which had a top speed of 130 mph, had been considered unsuitable (due to its bulk) for the twisting 6.6-mile road course so the only glimpse spectators had of the five-carburetor job, labelled "Le Monstre" by the French, was as pace car for the Seneca Cup event.

The 1950 Grand Prix was cloaked in gloom. First, because of intermittent showers, which caused seven laps of the Seneca Cup event to be run under yellow flag conditions; secondly, the fatal accident to veteran sports car driver, Sam Collier, cast a pall over what otherwise would have rightly been considered an interesting and exciting day of racing.

Nearly 100 cars competed in the day's 250 miles of racing. That one of the drivers, and a definite stand-out in the sport, should have been killed is indeed saddening. No spectator, witnessing events at Watkins Glen for the first time or as a rabid sports-car fan, could have left without the feeling of intense admiration for both the performance of the conventional sports cars and the hybrid models, as well as the driving skill and fortitude displayed by the contestants. The impact of the revival of interest in sports car road racing has already been felt and recognized by both the American motoring public and the American motor manufacturer, the latter largely from a design standpoint, if not projection-wise, with plans to incorporate many of the better roadability features of the sports cars into future conventional engines.

It was expressed by many casual spectators, on learning of Sam Collier's death, that they hoped this isolated tragedy would not have any effect on the increasing popularity of sports car road racing and the many benefits to the general motoring public that may be expected to be its future result.

RESULTS

Seneca Cup Race (15 laps, 99 miles)—1. Phil Walters (Healey-Cadillac) 2. Erwin Goldschmidt (Allard-Cadillac).

Queen Catherine Cup Race (8 laps, 52.8 miles)—For Class F (under 1100 cc) 1. Roland Keith (MG) 2. Fred Koster (HRG). Most closely contested event of the day, with first two cars seldom separated by more than 10 feet. In final lap Koster was clocked at 5:45.8. Keith's blown MG-TC was sleeved to bring it within limits.

Grand Prix (15 laps, 99 miles)—1. Erwin Goldschmidt (Allard-Cadillac) 2. Briggs Cunningham (Healey-Cadillac) Average-72 mph.

Spotlight on Detroit

(Continued from page twenty-one)

STYLE NOTES: Four-door sedans are the most popular body styles among new car buyers. Last year, over 40 per cent of all cars manufactured were of the four-door variety. Next in preference were two-doors, accounting for over 38 per cent. Stylists point out, however, that the popularity of the so-called "hard-top" convertibles is threatening to reverse this trend. They expect to see the two-door sedan become the most popular body style within coming months.

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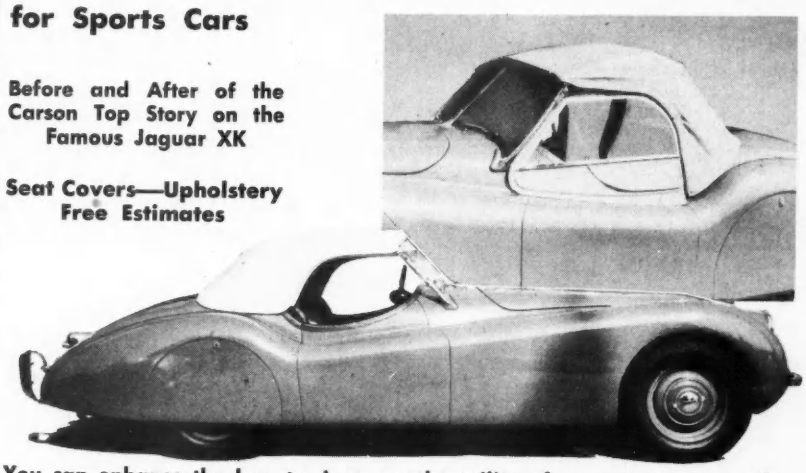

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by H. Wieand Bowman

NOTE: This is the concluding installment of the very timely and important subject of insurance, covering new automobiles, trailers and minimum limits you should carry.
—Editor

Release of attachment bond: Another inconvenience that your insurance can offset is the attachment of your car following an accident. If you are several hundred miles or more from home on a trip and should become involved in an accident, it is possible that your car may be attached in a law suit following this accident. The usual insurance policy provides that the insurance company will post a bond to the extent of the limits of your policy so that if you are carrying a $10/20,000 policy (not considered an adequate policy in 1950) your company will post a release of attachment bond to the extent of $10,000. Further, if suit is brought and you should lose the suit and if you or the insurance company wants to appeal the case, another bond must be filed for the appeal procedure. Presumably you will be interested in appealing only if the judgment against you is for an amount greater than your coverage. Should it be, the insurance company will pay the premiums on this bond also. Beyond this the insurance company will pay interest that may accrue on a judgment rendered against you until the judgment is settled, up to the limits of your policy.

Additional Coverages: Your policy also should provide that the company will pay any cost that might be levied against you in a suit that is defended by your insurance company. You also should be reimbursed for any expenses that you may incur at the company's request, other than loss of earnings during a period you may be tied up in court.

Omnibus clause: The omnibus clause is one of the most important features of your insurance policy. In essence it extends the P.I. and P.D. coverage in your policy to apply to other persons or organizations using or legally responsible for the use of your automobile so long as you have given your permission for its use. This gives equal coverage on your insurance policy to family members, relations, friends and others to whom you may have given permission to use your car. This omnibus clause also protects you as an employer if an employee of yours is driving and becomes involved in an accident.

Newly acquired automobiles: It is quite possible that after you have taken out an insurance policy you may sell or trade your car for another. Your policy should afford you automatic coverage on this newly acquired automobile (either new or used) for a period of 30 days from the date of its acquisition. When you sell the old family bus and take on a new car or decide to retrench and sell the big car and pick up an old car, such acquisition does not require the cancellation of the old policy and the issuance of a new policy on the new car immediately, as you may have thought. You have 30 days in which to notify the insurance company. During this time you have the same liability coverage on your new car as you did on the former car.

Trailers: If you own a camp or a general utility trailer, you may tow it and use it with your private passenger car without any additional premium payments so long as you don't use it in your business or have it towed by a commercial vehicle. This does not apply to the home or cabin type trailer, on which you are required to have another insurance policy.

Driving other than your own car: Your automobile liability insurance policy will extend with the same advantages to you when you drive, with the owner's permission, a borrowed car. Your coverage will further extend to your wife, or husband, to your employer or if you are a minor, to your guardian. However, if you are a parent your coverage will not apply to your minor children without paying an additional premium and having a rider placed in your policy.

What limits of insurance should you carry? Fifteen or twenty years ago in the days of conservative jury judgments, a $5/10,000 policy (that is, $5000 for a single claim and a maximum of $10,000 for multiple claims) was considered adequate. Today juries are considerably less conservative and the sky is the limit on judgments. Remember your insurance company doesn't cover your judgments in excess of the policy limits. They pay only up to the limits of your policy. Should you carry a $10,000 limit policy and a judgment be rendered against you for $25,000, the company will pay the $10,000. If you don't pay the balance, the plaintiff can keep that judgment alive indefinitely and that judgment is going to grow, with six per cent interest rates applying. Today the minimum adequate policy is considered to be a $25/50,000 with a $100/200,000 not unusual.

Assume for the moment that you should round a corner and approach an intersection and your brakes fail to function. You don't see, or perhaps just ignore, the stop street sign and you go barreling out onto the main road. Just about this time Mr. J. B. Doheavy, a local bigwig whose V.P. job is good for 25 G's a year, is cruising along in his Caddy convertible. J. B. has two kids in college and a wife whose beauty parlor expenses alone for the season eat up $1000 with ease. You cream him right smack in the middle. The Caddy rolls and four days later J. B.'s friends dry away the tears and Mrs. Doheavy breaks out the black gown. In court it turns out that J. B.'s company figured he was good for another 15 years in the swivel chair at least and with a steadily increasing earning capacity, J. B.'s salary for the 15 years might well have run close to the $400,000 figure. The Widow Doheavy sits quietly in the court room, heavy circles under her eyes and an aura of tragic tranquility emanating from her as occasionally she weakly pats the hand of her 17-year-old daughter who's been forced to drop out of college. Without a further dressup to the picture you can see what's likely to happen. A judgment of $50,000 seems lenient to the jury who know you are insured but, of course, not for how much. You have a $10/20,000 and the next thing you know, you are faced with a $40,000 deficit on that judgment that you've either got to pay or go into bankruptcy. Sounds rugged, but it could happen—tomorrow.

Remember, the moment you get that new automobile registered in your name you have the instrument of your financial undoing. It's better to spend a few extra dollars to increase your coverage and do without the new seat covers.

Hill Climbs Are Fun

(*Continued from page twenty-three*)

in every phase of motor sport.

12. Places are usually determined on the basis of the better of two runs for each driver.

These are only basic suggestions; specific situations will require more detailed regulations. Once the organization has been all arranged and you're on the starting line waiting for the "go" signal, you're in for a lot of fun from there on.

Diesels at Speed

(*Continued from page nineteen*)

went into its Kurtis-Kraft "Championship" chassis. Torsion bar suspension and Goodyear spot-type brakes were used all around, a modified single-plate Auburn clutch transmitted the drive to a production Cadillac three-speed transmission, and power at the stern was handled by a Conze quick-change rear axle.

A month later veteran driver Jimmy Jackson took the car, now painted a bright green and carrying the numeral 61, around the Indianapolis track for the first time. And while the business of fitting car, engine, gear ratios, and driver to the track progressed, back at the Cummins plant the work went on—on a duplicate "tuned" JBS-600.

That ace-in-the-hole really paid off. Qualifying speeds had gone up at Indianapolis from an average 128.61 in '49 to 131.045 this year, and the Cummins car's calculated 127 just wasn't going to be enough. But the reserve engine had been refined to the point where it was pulling 320 bhp at the astonishing (for a diesel) rate of 4000 rpm, and this engine was installed in the racer. The ramming effect of the front-mounted supercharger airscoop brought the car's bhp output up to about 345, produced an absolutely clean exhaust. The car qualified on May 26 at 129.208 mph, and set a new diesel record for the track.

In the actual "500" No. 61 was driven a planned race from the start. Jackson held 110 mph for the first 10 laps, made a few rounds at 117, moved up to 119, then turned several laps at 120. On the 52nd lap the car came into the pits with the mounting flange of its torsional vibration damper broken. Any quick repair would have been unsafe and the Cummins entry retired, but not without having impressed tens of thousands with the untapped potentialities of diesel power.

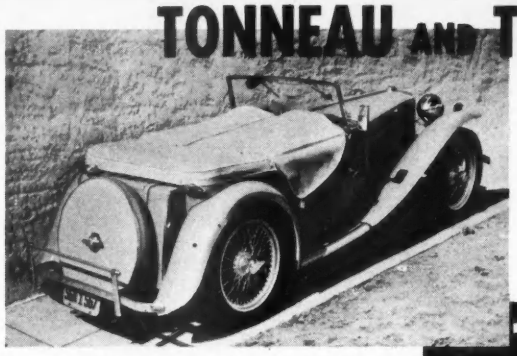
The defect was actually a trivial one, and the power unit had performed with a degree of reliability almost unheard of in newly designed, scarcely developed racing engines. Happily there were other challenges open to the new car—Bonneville, and the International Diesel Speed Records.

The interval from June to September permitted any kinks to be unsnarled, and on Sept. 11, according to schedule, Jimmy Jackson bettered the international records as shown in the accompanying box (page 19).

And how had the breed been bettered? In the first place, the JBS-600 itself had been force-developed at an otherwise unlikely rate. It raced to new records on Mobilfuel, a standard commercial fuel oil, demonstrating that such fuels are adequate even for new highs in performance and output. It had proved that standard commercial timing is best at engine speeds up to 4000 rpm, thereby simplifying the further development of the high-speed diesel engine. Cummins discovered how to get economical combustion at higher engine speeds than ever before. And by capturing the world's diesel-speed record Cummins brought immense international prestige to their firm and to the entire American diesel industry.

TONNEAU AND TIRE COVER

BY Kunyan



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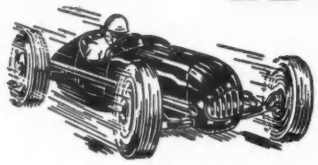

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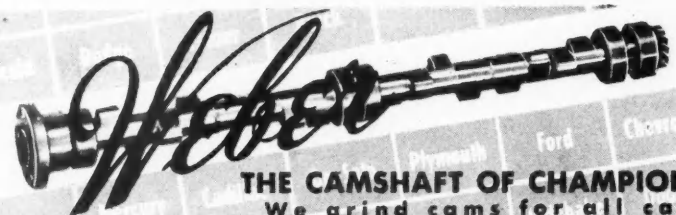

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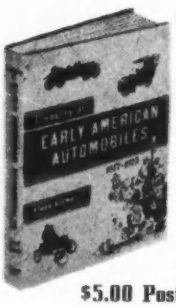

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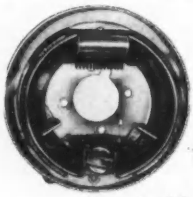

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Write for Literature

It Won't Look Like This

(Continued from page sixteen)

automobile is still in use, it will be because it offers transportation to the individual.

Such being the case (and to date no one has successfully disputed it) why do the stylists and artists offer something weirdly shaped with strange welts, blisters, and smooth protuberances? Streamlining? Don't be misled. Aerodynamically, a truly streamlined form would be unsuitable to any vehicle of transportation which depends on adherence to the ground for its stability. Still speaking aerodynamically, a truly streamlined form is, among other things, an airfoil—that is to say, it possesses a lift factor. Were a car to be so designed, it would possess a lift factor which at high speeds would dangerously lessen the adhesion between the tires and the ground, thus making the car unstable. To put it more simply, it would have such a pronounced tendency to "take off" at high speeds it would lose its directional stability; you couldn't steer it.

Such things as seats which may be rearranged to form a bed, or moved about and faced in any direction at will, electrical connections for razors, folding tables, etc., are gadgets. They possess a novelty value which soon wears off. They neither aid nor add to the prime function of an automobile, which is to furnish transportation.

Your car of tomorrow will seat from three to six adults comfortably. The seats, adjustable as to height, angle, and spacing for legroom only, will face forward and be of maximum width. The contours of the seat cushions and seat backs, which will automatically adjust themselves to the passenger's weight, will comfortably and restfully support the body in a sitting position. The seat carriage itself will be independent of the car frame and will be shock mounted so that engine vibrations and road impacts cannot be transmitted to the passenger.

What form will it take, how will it look?

One thing is sure. The Buck Roger cars of the Sunday Supplements, with their plastic domes, stabilizing fins, and weird shapes, will be conspicuous by their absence. The proportions of your car will reflect the simplicity of good taste rather than tricky arrangements of masses and bizarre layouts. This does not mean, however, that it will have a starkness and over-simplification of lines and masses. Accents will be used and contours will be developed to reflect highlights. Color will become an integral part of design rather than an application of afterthought. Color may be impregnated in the metal, particularly if the use of aluminum and magnesium alloys continues to develop, and will retain its lustre for the life of the car. The lines of your car will reflect grace and motion, and will suggest the power and fleetness of the car even when it is standing still. Your car—and mine—will be functional in appearance. It will still look like an automobile.

Evolution of an Industry

(Continued from page fifteen)

straight forward, but turn the inner wheel through a greater angle than the outer one when rounding a corner. This led him to the invention of the Elliot steering knuckle, which is still used.

At the same time, Joseph W. Jones, who was developing a spring motor for a gramophone, bought a car. It wasn't long before he began to get into arguments with his friends and finally, to settle them, he invented the centrifugal speedometer.

Another new entry came in a roundabout way. The White family, of sewing machine fame, purchased a steam car. One of the boys, Rollin H., was given the chore of keeping it in running condition, no easy job in those days. The chief difficulty was that the boiler was always burning out. He finally adapted the Serpollet flash boiler, which was so successful that he made others for his friends, and soon was in steam car business.

As cars were becoming more reliable and hence more useful, people began using them at night. Bicycle lamps were first used, but this year S. W. Rushmore started his long list of developments with an aplantic mirror (probably similar to the aplantic reflector used with flash bulbs today). He mounted the nine-inch reflector on the frame of his Locomobile and fitted a lever to allow the driver to swing it to the right or left.

The first electric starter was invented by Clyde J. Coleman and was used on a few Rockaways.

This year (1899) Freeland O. Stanley drove one of his steamers up Mt. Washington, New Hampshire. This was no mean feat, for even today the road is so steep and tortuous that the station wagons that take tourists up use special transmissions and cooling systems. Twenty-one more makes made their first appearance this year. At least three were electric and two were steamers. And then came the turn of the century and many new "firsts."

NOTE: The second installment of "Evolution of an Industry" will be presented in the January 1951 issue of MOTOR TREND.
—Editor

Nash Motor Trials

(Continued from page eleven)

drive (even more so than before, using Hydra-Matic), is fairly maneuverable in traffic and is a car for long distance cruising with economy. Its outstanding features are its economy, its ride and its comfort.

To help the reader evaluate a car, insofar as economy of operation is concerned, we are inaugurating a system of rating the cars that we test in "Motor Trials." This is in addition to our analysis of the car, both mechanically and performance-wise, and is termed "Trend Trials Number." We believe this will help the person who is trying to decide between two cars to reach a decision as to which car will best fit his pocketbook.

This "Trend Trials Number" is arrived at through totaling the cost per bhp (how much it costs for the power in an automobile), the fuel cost per year (based on the over-all fuel consumption average obtained on the road test) and the normal maintenance cost. For the purposes of standardization, normal maintenance is based on the same items for each car, the replacement and labor costs providing the variance (ref: *Motor's Flat Rate Manual*). The total cost is added up and then divided by 10 (to give an easier number to work with)—*the lower the number, the better the value.*

The Nash Statesman with Hydra-Matic has been given a "Trend Trials No. 24.1," which is lower than any previous car tested in its price bracket ($1701—1950).

PREVIOUS MOTOR TRIALS

MG-TC, 1950 Studebaker Champ...	Oct. '49
1950 Buick Special	Dec. '49
1950 Ford V8	Jan. '50
1950 Hudson Pacemaker	Feb. '50
1950 Plymouth	Mar. '50
1950 Mercury	May '50
1950 Nash Rambler	June '50
1950 Oldsmobile 88	July '50
1950 Chrysler New Yorker	Aug. '50
1950 Chevrolet	Sept. '50
1951 Kaiser	Oct. '50
1951 Henry J	Nov. '50

SOUND OFF!

NOTE: Since stating in the August '50 issue of MOTOR TREND that we would publish our readers' complaints about their new cars, we have been deluged with such letters. In the October '50 issue we published excerpts from some of these letters and will continue to do so in an effort to acquaint the automotive manufacturers with the likes and dislikes of the motoring public. If you have a complaint or suggestion, address your letter to SOUND OFF!, MOTOR TREND, 1015 So. La Cienega Blvd., Los Angeles 35, Calif.

ARE we entirely satisfied with our new cars? No, so much so that after driving a 1949 model of one of our highly advertised makes for 10 months, I sold it and purchased a year older model of the same make. . . . What do I want? . . . a comfortable ride . . . visibility is a must . . . handling qualities must be such that the car can be controlled with a minimum of mental effort and attention . . . There is just one 1950 car on the market in the low-priced class that I can wear a hat in. . . . Of what use is a so-called six passenger coupe or sedan when the passenger in the center has to brace himself on the rare occasions when this position is used?

H. B. P.
Riverside, California

★ ★ ★

I kept the car ('48 Fleetline Chevrolet) for 10 months and . . . put over 100,000 miles on [it] . . . I must say that General Motors has never built a better car. . . . The difference between my '48 and my folks' new '50 Chevrolet is very [marked]. . . . In six months . . . they have had considerable trouble with valves, front end suspension, and the doors. . . . The rear fenders are poorly attached to the body. . . . The cloth on the doors is not as durable. . . . The bumpers are thinner. . . .

Richard Gerwig
Sutton, W. Virginia

★ ★ ★

I feel that it is about time that someone spoke about . . . a real farmers' and sportsmen's car . . . The Kaiser Traveler has a body type which is ideal insofar as luggage space is concerned but it retains all the faults of the regular Kaiser. . . . The same goes for most station wagons. . . . I might list a few of the disadvantages of our modern cars from the farmer's viewpoint: (1) excessively low road clearance, (2) improper weight distribution, (3) too much overhang, (4) too slow steering, (5) wheels crowded so far under great expanses of body as to make putting on chains or changing a wheel virtually impossible, (6) small luggage compartments [in usable space].

Vernon Jacques
Aitkin, Minnesota

Tendance Continentale

(Continued from page twenty-five)

"Miniature Car Construction," by C. Posthumus, and is directed at the model car builder who is concerned with making cars, and not with making them go. The art of perfect scale rendition is covered here in thorough detail, including innumerable hints on the execution of tiny details, so important if the final product is to be convincing. Abundant photos and drawings are included, and both racing and sports cars are dealt with. The second book, "The Model Car Manual," by G. H. Deason, is for the power-driven model car fan, and presents a very detailed survey of each type of power source: I.C., electricity, rubber, rockets, and jets. Design and construction of each type are well described, including types of wheel drives. Building of the high-speed competition car rates special treatment and, again, photos and drawings are plentiful. Each books sells for 7s6d—about $1.25, Address on request.

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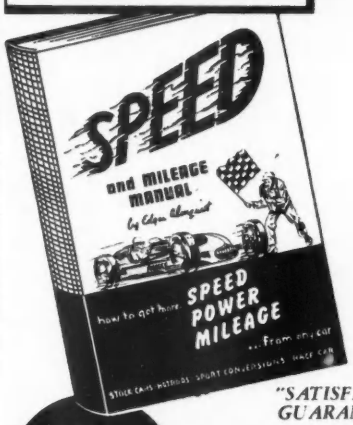

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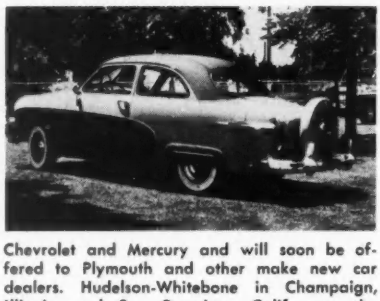
TRADE TOPICS

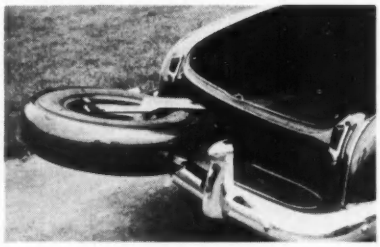
IF YOU WANT TO SERVICE YOUR OWN AUTOMATIC TRANSMISSION, the book that will help you do it is "Automatic Transmissions Simplified." Written by Jud Purvis, a top service authority, the book is a planned encyclopedia of information on all past, present, and some future features of power transmissions. This book tells in detail the basic function, how the various units and systems work, and how to trouble shoot and service all types of automatic transmissions. Liberally sprinkled with photographs, simplified drawings, cutaways, diagrams and color schematics, this book will be of extreme interest to auto mechanics, salesmen, service station operators and car owners. Available at $4 per copy from the Goodheart-Willcox Co., Inc., Chicago, Illinois.

★ ★ ★

CONTINENTAL SPARE TIRE KITS ARE BECOMING MORE POPULAR all the time, with the latest innovation being a spare tire assembly that folds down out of the way of the trunk lid (see photograph). A combination safety lock prevents theft of the spare, keeping it securely fastened to the trunk lid. These units are currently available for use on Ford,



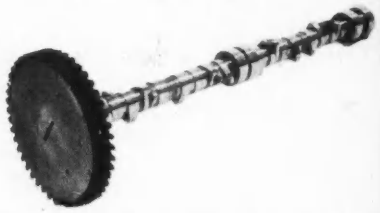
Chevrolet and Mercury and will soon be offered to Plymouth and other make new car dealers. Hudelson-Whitebone in Champaign, Illinois, and San Francisco, Calif., are the manufacturers.



★ ★ ★

"SOUPING THE STOCK ENGINE," A NEW MANUAL OF SPEED, is the latest automotive book to be published by Floyd Clymer, Los Angeles. Not strictly an instruction manual, the book outlines methods of planning a hopped-up engine of any make. A feature is a method for estimating the true performance for any souped-up engine, with instructions for plotting the horsepower curve. Containing more than 150 illustrations, photos, charts and drawings, "Souping the Stock Engine" has 12 chapters dealing with such details as planning supercharger layouts, fuels, competition fuel formulas, engine performance, block work, heads, overhead valves, carburetors, ignition and many other problems. Postpaid, $2.00.

A CAMSHAFT THAT AUTOMATICALLY ADJUSTS THE AMOUNT OF VALVE OVERLAP has been announced by the International Camshaft Corporation. Its purpose is to give a minimum of valve overlap at idling speed and automatically increase the valve overlap (between intake and exhaust) to that of a ¾ grind cam at high rpms, thereby increasing engine efficiency all the way up the engine rpm scale. In dynamometer tests by the manufacturer, the engine rpm was increased 1200 (up to 6400 rpm) and a gain of almost 10 hp was made. The auto-



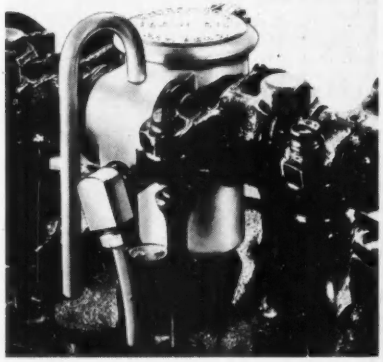
matic camshaft has an inner and outer shaft, constructed with "split" cam lobes (see photograph). These split cam lobes are what change the amount of valve overlap: as engine rpm increases, a mechanism within the timing gear causes the lobes to "split"; as engine rpm decreases, a reverse action takes place. This camshaft can be produced as a completely interchangeable part, but it is not yet in production. The manufacturer states that since, in a full-speed position the camshaft gives 30 degrees advance, complicated, centrifugally governed distributors can be replaced by less expensive, stationary breaker plates.

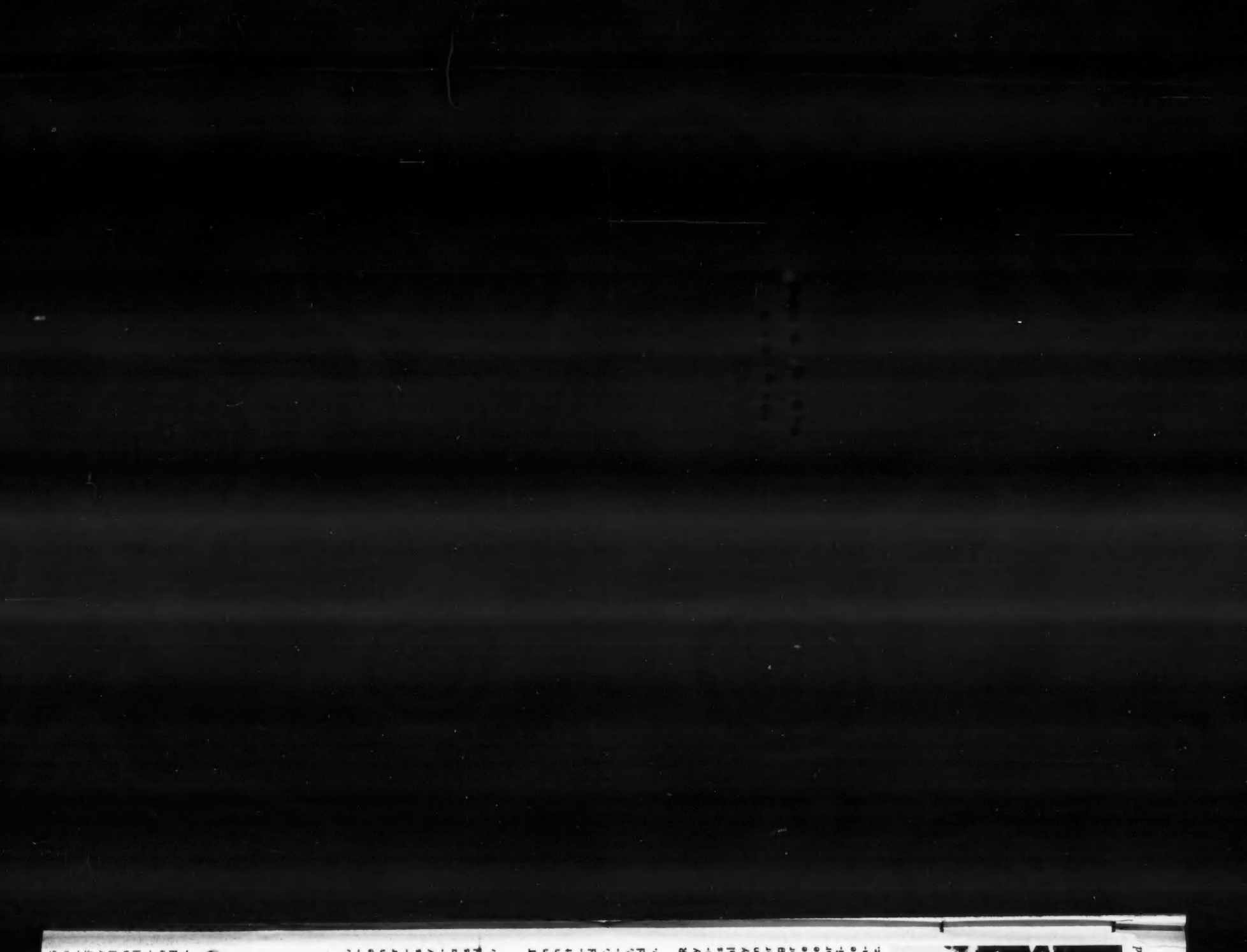
★ ★ ★

IF YOU'RE LOOKING FOR A CHRISTMAS GIFT THAT IS PRACTICAL, you'll be interested in the Mile-O-Meter, which has received much nationwide publicity lately. This unit (first announced in Sept. '50 MOTOR TREND), registers the mpg consumption at every speed and under all driving conditions. It fits every car, regardless of year or make, and can be installed in three minutes. As a Christmas gift, Gale Hall Eng. will gift wrap the gauge and enclose a card or letter with the package.

★ ★ ★

A NEW "CLEAN-OIL" VALVE FILTER FOR CHEVROLETS, designed to improve efficiency and eliminate excessive wear, has been announced by the Wolfer Corporation of Los Angeles, Calif. This unit (½ size of conventional filter) has an internal mounting, without any outside supports or lines. It is installed in place of the oil distributor valve on the rocker arm assembly and filters all of the oil entering the valve mechanism through a Purolator micronic filter. It thereby tends to stop valve wear, valve sludging, valve sticking and valve noise. While the present unit is designed for Chevrolet engines, Wolfer Corporation engineers are readying production on similar type units for all other overhead valve engines, including Buick, Nash, Oldsmobile and Cadillac.





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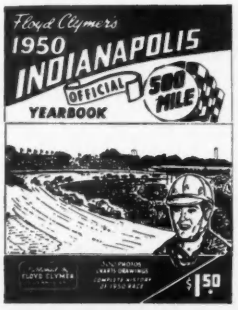

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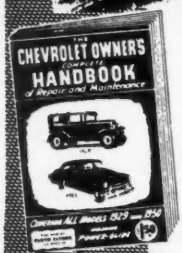

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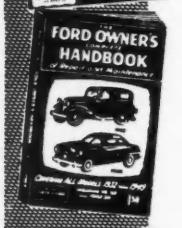

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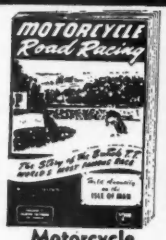

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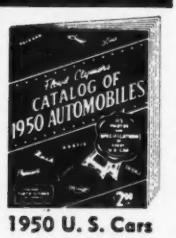

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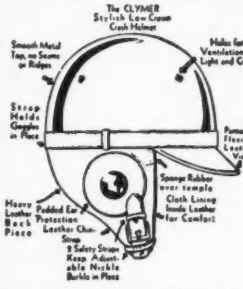

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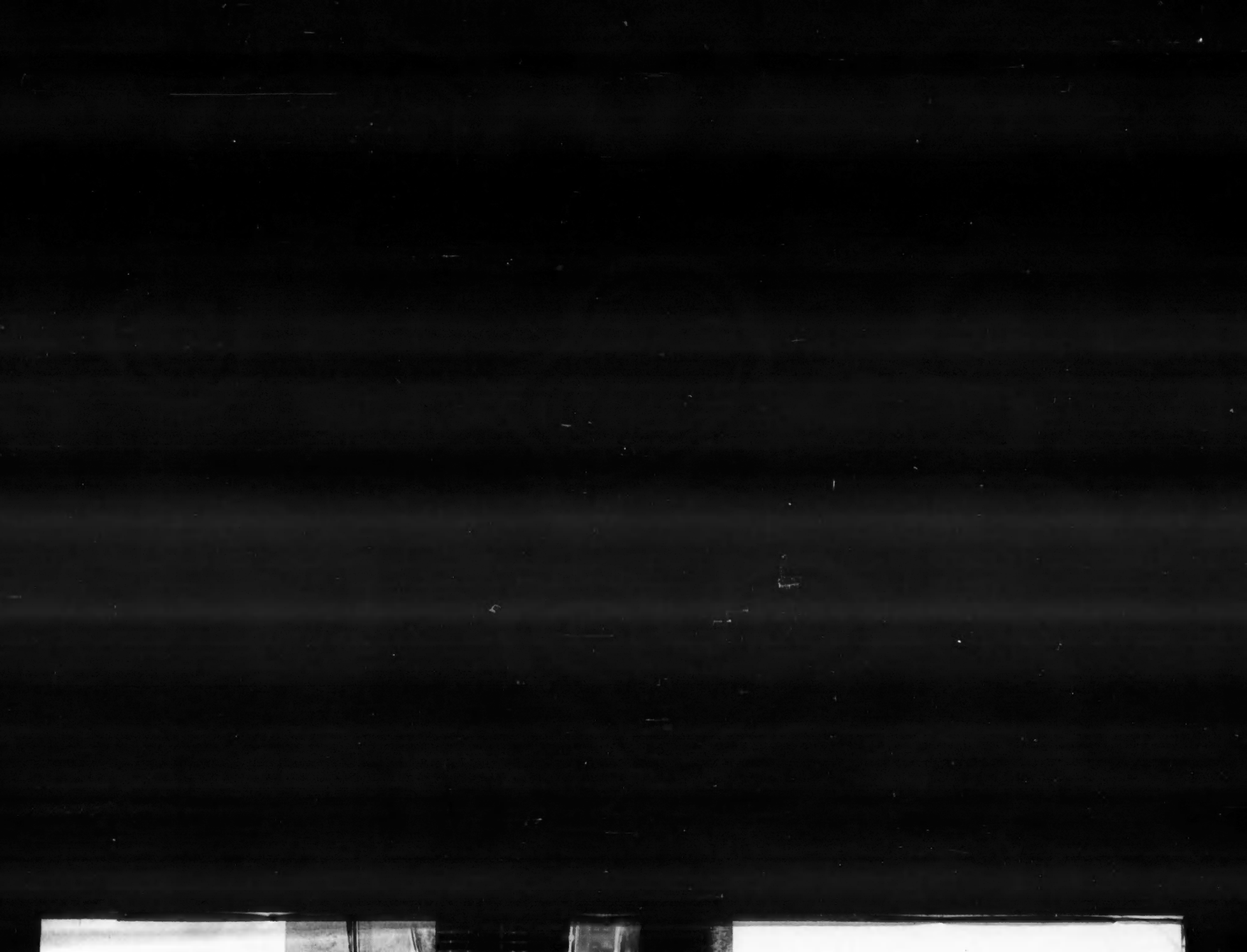
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